THE IRON TRADE REVIEW

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NO STIMULATION

OF IRON MARKET FOR POLITICAL EFFECT.

Recent Orders for Cars Result in Orders for Material—Pig Iron Dull, but Prices Are Firm.

Dullness continues to prevail in the iron market. Whether this is due to uncertainty as to the presidential election is a matter of opinion, but it certainly is true that predictions that the market would be artificially stimulated for political effect have not been fulfilled. In spite of the comparative inactivity, September recorded some substantial advances, especially in the Chicago district, where specifications on the books of the leading interest increased 30 per cent in September over August, and orders 25 per cent.

Railway Buying

Recent orders for cars have resulted in 12,000 tons of structural material for steel underframes being purchased by the Bettendorf Axle Co., and 9,000 tons of plates and shapes by the Standard Steel Car Co., which is building the first order of 1,000 cars for the Chicago & Alton. This railroad has placed a second order for 1,000 cars, which will require about 10,000 tons of plates; the Grand Trunk Pacific is figuring on 50 locomotives; the Michigan Central is having 5,000 freight cars rebuilt; the Harriman lines are receiving prices on 220 all steel Pullmans; the Chicago, Burlington & Quincy is buying steel underframes; the Iowa Central has ordered 50 all steel cars, and other roads are in the market for cars and rails, although the inquiry for the latter is limited. Low prices are undoubtedly responsible to a large extent for this business.

Iron Ore Movement

Iron ore shipments from the Lake Superior region for September amounted to 4,646,024 tons, against 6,217,653 tons in September, 1907. The shipments to date amount to 16,630,960 tons, compared with 30,559,206 tons for the same period last year. The ore market is inactive.

Pig Iron Very Dull

The general report in regard to pig iron is one of inactivity, but prices are for the most part firm, with few changes during the past month. When buyers are disposed to place orders for forward delivery, furnaces, as a rule, are not inclined to quote beyond the first quarter of 1909. There is some activity in basic in the Pittsburg district, and a Canton, O., concern is in the market for a large tonnage.

Billets and Bars

The Standard Forgings Co. has contracted for 9,000 tons of forging billets, and there is somewhat increased activity in this line. The demand for wire products continues active. Bar iron is firm at present, but sales are not heavy.

Coke Prices Are Firmer

Owing to the continued drouth in the Connellsville region, the plant of 500 ovens of the Ellsworth Coal Co., a subsidiary of the Lackawanna Steel Co., has been compelled to go out of commission, and other operations are in danger. Owing to this condition, rather than to increased demand, prices are firm. There is, however, some increase in activity in the Pittsburg district, where several furnace interests have contracted for their requirements for six and nine months, aggregating several hundred thousand tons.

DECREASED DEMAND

For Pig Iron and Scrap on North Pacific Coast—Rolling Mill Idle.

Office of THE IRON TRADE REVIEW,
302 Pioneer Building,
Seattle, Wash., Oct. 2.

The past week has not seen much improvement in the iron trade conditions of the Pacific coast. The demand for pig iron and scrap which was quite encouraging 10 days ago, has receded perceptibly. Finished lines are also quieter. The leading north coast rolling mill, which has been running at reduced capacity continuously throughout September, will shut down during the first week in October. Building operations are being continued with reasonable activity and the demand for structural material in small lots is fair.

It is announced that the new steel castings plant of the Columbia Steel Co. at Linnton, near Portland, Ore., upon which construction work is expected to commence some time next spring, will consist of the following buildings: Foundry, 120 by 250 feet, machine shop, 60 by 120 feet, 1½ stories high, pattern shop, 50 by 40 feet, and fireproof pattern storage, 50 by 120 feet, two stories. Work on the docks and retaining wall preparatory to future building is now under way.

The blast furnace of the Irondale Furnace Co. at Irondale, near Port Townsend, Wash., is still out and probably will not blow in before Dec. 1. Extensive plant improvements are now under way at Irondale and the little town is very active. Two 20-ton basic open-hearth steel furnaces are being erected, supplemented by a continuous heating furnace and a rolling mill of about 100 tons daily capacity. The mill will include in its equipment one 22-inch, 3-high, single stand mill. It is planned, when this equipment is installed, to run the steel plant on a mixture of scrap and the off-grade iron produced by the furnace, leaving only the No. 1 pig to be offered to the foundrymen. The furnace will run on coke most of the time.

The bureau of yards and docks, navy yard, Puget Sound, at Bremerton, Wash., has decided to purchase two additional 450-horsepower water tube boilers, as auxiliaries to the power plant

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THE WEEK IN IRON CENTERS

PITTSBURG.

Some Activity in Basic, but the Market Makes Little Progress.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Oct. 6.

It is difficult at present definitely to point out the improvement that is being made in the iron and steel market. Each week is like its predecessor in many respects. The industry has advanced materially from the low point of business depression, but its forward motion is now extremely slow, if there be any progressive movement at all. The fact that the ground gained is being held may be made a source of satisfaction, but scarcely of optimism.

Conditions, if anything, are quieter now than they were several weeks ago. The sheet trade, which has been steadily increasing, appears to have reached a high point of activity under present conditions, and for the past several weeks the volume of business booked has been practically unchanged. The progress in wire products is also less in evidence. Merchant bar specifications are lighter. Of the more active products, merchant pipe appears to be consistently adding to its strength. Prospects for improvement in the heavier lines, rails, plates, semi-finished steel and structural shapes, are indefinite.

It is a common expression among iron and steel manufacturers to attribute the present stagnant state of trade to ante-election influences. While this factor, in some degree, is undoubtedly having a restraining effect, the market appears to be lacking in other fundamental respects, which need to be supplied before it can reclaim a normal basis of activity.

Increasing gravity attaches to the prolonged drouth in the central section of the country. The coke regions, by reason of the great supply of water needed in coking operations, are now subject to severe hindrance. Several instances of enforced idleness are presented, including the plant of the Ellsworth Coal Co., a subsidiary of the Lackawanna Steel Co., the 500 ovens of which have been banked.

Pig Iron.—In some grades there is a slightly improved movement, but the pig iron market generally continues dull. Inquiries are somewhat more plentiful, but they are usually of small order and call for prompt shipment material. Basic iron is showing the most activity at present, and some business has been put through the past week, including 500 tons to an Ohio melter and 2,000 tons to an interest in this district. This iron is for delivery over the remainder of the year, and was taken at $14.25 valley, which appears the minimum quotation. The Pittsburg Steel Co. has also been buying some basic in the past 10 days, but as these transactions are closely guarded, the total tonnage involved is a matter of conjecture. The iron is for prompt shipment, however, and has little bearing upon the company's inquiry for 150,000 tons a year which is still before sellers. The United Steel Co., of Canton, O., is in the market for 6,000 to 12,000 tons of basic for first and second half respectively. Foundry iron is moving quietly, but there is less prompt material available, and last quarter iron is more readily obtainable. Prices have not changed. There is very little demand for Bessemer and sales are in small lots. The average Bessemer price for October was $15 valley or $15.90 Pittsburg, against $15.21 valley and $16.11 Pittsburg in August, and $15.83 valley and $16.73 Pittsburg in July. This is the lowest price reached by Bessemer iron since September, 1905. The Midland Steel Co. is about to blow in its furnace at Midland, Pa., on foundry iron. This stack has been out for a number of months. For prompt and last quarter shipment on northern iron we quote as follows:

Bessemer, valley	$15.00 to 15.25
Bessemer, Pittsburg	15.90 to 16.15
No. 1 foundry, Pittsburg	15.60 to 16.10
No. 2 foundry, Pittsburg	15.25 to 15.50
Gray forge, Pittsburg	14.40 to 14.65
Basic, valley	14.25 to 14.50
Basic, Pittsburg	15.15 to 15.40

Ferro-Alloys.—More life in ferro-alloys is apparent, especially ferro-manganese, and there is a stiffening tendency. English sellers of ferro-manganese are holding firm in prices and German makers are well sold up. A western steel company closed this week for 300 tons and another western interest took 100 tons. We quote standard 80 per cent ferro-manganese $43 to $44 seaboard or $44.95 to $45.95 Pittsburg.

Imported 50 per cent ferro-silicon is quoted $67 Pittsburg on forward deliveries; domestic 12 per cent, $27; 11 per cent, $26; 10 per cent, $25. These quotations are applicable to Pittsburg territory .

Plates.—The Chicago & Alton railroad has placed a duplicate order for 1,000 steel freight cars with the Standard Steel Car Co. A similar order was placed by this road with the same company about a month ago, making a total purchase to date of 2,000 cars. The additional 1,000 cars will require about 10,000 tons of plates. The plate market is only moderately active. Specifications are coming in well against old contracts, but new business is only fair. Mill operations this week are light. Prices are being shaded on the smaller gages. We quote:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Increased activity in sheets is less marked but there is a good trade current. Jobbers are stocking in some sections, particularly in the far west. Several additional contracts of corrugated sheets for mill construction were placed this week. Shading of prices is confined largely to flat galvanized sheets in which the official schedule is being undersold about $2 a ton. The mill activity of the American Sheet & Tin Plate Co. was not increased this week. We quote:

Black steel sheets, cold rolled, No. 28 gage, $2.50 per 100 pounds, and galvanized sheets, No. 28 gage, $3.55 per 100 pounds, plus the regular extras.

Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation; and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Jobbers are allowed $1 a ton from these prices.

Tin Plate.—Manufacturers of tin

plate are now booking contracts for winter delivery. Much of this trade is from the salmon packers in Alaska and the northwest, and shipments will go forward in January, February and March. Fruit prospects are better, but the tomato crop will be short. The independents are working on good schedules. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—Outside of a sustained activity in light rails, the rail situation is dull. Lumber companies are steadily ordering light rails for their operations, and the Carnegie Steel Co. booked about 1,800 tons this week. Mill No. 3, the light rail mill at the Edgar Thomson works, is operating regularly, but mills 1 and 2 on standard are running spasmodically. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—A sale of 2,000 tons of billets the past week at full prices is reported. There is no evidence that the principal makers are shading steel prices. The movement of sheet and tin bars has fallen off due to the decline in tin plate, which has not been counter-balanced by a proportionate increase in sheets.

Bessemer and open-hearth billets, base sizes, are quoted at $25 Pittsburg, and forging billets at $27 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $27.50 Pittsburg, valley and Wheeling territory, and $27 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—Little new business in hoops and bands is expected until toward the end of the year, when the regular buying season opens. The spreading temperance agitation throughout the country is having a marked effect on this market. We quote:

Cotton ties, 87½c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 90½c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c, base half extras as per standard steel.

Merchant Bars.—Consumers of steel bars are not taking their material so freely, and specifications are in less volume. The smaller users are buying quite evenly and new business is largely from this source. There is a good demand for bedstead angles and reinforcing bars are active particularly in the west. The rerolling mills are obtaining their portion of this business, but are not so aggressive in naming low prices. Bar iron conditions show little change, although there is more inquiry from the railroads for this product. We quote:

Common iron bars, 1.40c Pittsburg in carload lots and over; 1.45c in less than carloads; 1.32c to 1.35c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3 inch, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting 57 per cent in carloads, and 52 per cent less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.60c base. Iron finished tire under 1½ by ½ inches, 1.55, plus ½ extras on tire card; iron finished tire, 1½ by ½ and over, 1.40c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch thicker, we quote base prices per 100 pounds, $3.35 on hard, and $3.60 on soft.

Structural Material.—Conditions in structural lines are showing little change. Considerable inquiry is before the market, but contracts placed are quite limited. Bridge construction is light, the railroads doing little in this line. Fabricating prices are still unsatisfactory from the standpoint of manufacturers. The government has asked for second bids to be opened Oct. 8, on the shapes required for the battleship Florida, which is to be built at the New York Navy Yard. This is only a portion of the total material required, about 8,900 tons. The general contract for the Mercer County courthouse has been let to the Luyster Co., Dayton, O. We quote:

Beams and channels, 15-inch and under, 1.60c; over 15 inches, 1.70c; zees, 1.60c; tees, 1.65c; angles from 3 to 6 inches, 1.60c; over 6 inches, 1.70c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Merchant Pipe.—The activity in merchant pipe is well sustained. There is a strong demand for steam goods because of the approach of winter, and other classes of merchant pipe are being steadily taken. Some stock orders are being received, but this is not a general movement as yet. The prevalent drouth through the middle section of the country has promoted water line construction, but oil and gas line contracts are not so numerous. Among the new inquiries in the market are those for 25 miles of 8-inch gas line pipe for Ohio points, four miles of 2-inch tubing, and five miles of 1-inch merchant pipe for western shipment. We quote the following official base discounts with an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
¼ to 6 inches....	75	65	73	63

Boiler Tubes.—The boiler tube trade is still comparatively light, as business with boiler manufacturers is not showing much improvement. Locomotive tubes are not active, since the railroads are not buying largely for maintenance. We quote the following official base discounts to the general trade on base sizes:

BOILER TUBES.

	Iron.	Steel.
2¼ to 5 inches.....	52	65

Wire Products.—No large increase in the volume of business moving is being recorded in the market for wire products, but current trade is supporting fairly sound conditions. The influence of the approaching election in restaining business in some degree is more apparent. Generally jobbers are taking little stocks, but in wire nails there is evidence of specifications exceeding consumptive needs. We quote:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15c, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c; and to retailers in carloads, 1.85c.

Wire Rods.—An inquiry for 1,000 tons of open hearth rods for eastern delivery is current. Rod business is fair. We quote $33 Pittsburg, on Bessemer, and $34 Pittsburg on open-hearth rods.

Coke.—The water scarcity in portions of the Connellsville coke regions, due to the want of rain, is daily becoming more severe. During the past week, the plant of the Ellsworth Coal Co., a subsidiary of the Lackawanna Steel Co., and consisting of about 500 ovens in Washington county, was obliged to discontinue operations because of a lack of water supply. The steel company is now obtaining its

coke from other operations. Several small independent companies have also been obliged to bank their ovens. As a result of this condition, some effect on the market has been apparent, and the quantity of coke on track has decreased. The market in general is showing more activity. Several furnace interests have closed for their requirements over six and nine months to July 1, aggregating several hundred thousand tons. The ruling prices are $1.60 to $1.75 ovens to Jan. 1, and $1.90 to $2 to July 1. A number of foundry contracts to July 1 have also been taken at $2.25 ovens. The prompt foundry market is around $2. The *Courier* for the week ending Sept. 26 shows 18,486 ovens active, 19,000 inactive with an output of 198,239 tons against 18,213 ovens active, 19,257 inactive, and a production of 201,485 the preceding week.

Old Material.—Sales of heavy melting stock by the Pennsylvania railroad this week advanced this grade of old material about 25 cents a ton. The railroad obtained $15 and even $15.25 for some of its accumulation. The Republic Iron & Steel Co. also entered the market in the week and made some light purchases of wrought scrap, about 1,000 tons which effected a stiffening in asking prices. The Pennsylvania railroad continues to increase its supply of rerolling rails, awaiting a higher market. For September, it offered 21,670 tons against about 18,000 tons in August. The B. & O., which will close this week, has a list consisting of 1,000 tons of steel and 2,000 tons of rerolling rails. There is only a mild buying by the principal consumers in this district and the market is being supported largely by the unwillingness of the dealers to release their stores, except at advanced prices. We quote as follows, gross tons delivered in the Pittsburg district:

Heavy melting scrap, $14.50 to $15.00; re-rolling rails, $16.00 to $16.75; bundled sheet scrap, $12.00 to $12.50; iron axles, $21.00 to $21.50; old iron rails, $17.00 to $18.00; No. 1 wrought scrap, $16.00 to $16.50; old car wheels, $14.75 to $15.25; low phosphorus, $18.00 to $18.50; machine shop turnings, $9.25 to $9.75; cast borings, $8.50 to $9.00; No. 1 cast scrap, $14.00 to $14.50; malleable, $14.00 to $14.50.

CHICAGO.

Corporation Specifications Show Large Increase for September.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Oct. 6.

Although, in anticipation, it was reported that September might show rather poor records for comparison with August, it now develops that the specifications on the books of the leading interest increased 30 per cent in September over August, and the orders were greater by 25 per cent. These increases cannot be considered as applying to the mills generally in this territory, inasmuch as the Corporation books were helped out materially by the demands of its own new construction. The greatest gains were made in structural material. The low prices obtainable on fabricated structurals have brought out a considerable volume of small business, but the large enterprises have shown the same backwardness that has characterized them for many months. Of leading interest last week was the placing of orders for 12,000 tons of structurals for steel underframes by the Bettendorf Axle Co., and 9,000 tons of plates and structurals by the Standard Steel Car Co. This company is building the first order of 1,000 cars for the Chicago & Alton, which road has now ordered another 1,000. The inquiries and orders being received from railroads throughout the west are much more plentiful and in all lines of equipment some improvement is noted. The Grand Trunk Pacific is figuring on 50 locomotives, the Michigan Central is having 5,000 freight cars rebuilt by the American Car & Foundry Co., Harriman lines are getting prices on 220 all steel Pullmans, the Chicago, Burlington & Quincy is buying steel underframes, the Iowa Central has ordered 50 all steel cars, and two southern roads are in the market for cars and rails. This should not be mistaken as a return of prosperity, for the aggregate is small as compared with the normal requirements of the western roads, but it does represent increased buying and a belief that now is the right time to take advantage of the lower prices.

Steel bar specifications hold up very well, but implement manufacturers are working much closer to the actual orders in sight, especially for domestic trade, than ever before. Sheets also compare well in activity with any of the finished materials. Wire goods are moving freely and the manufacturing trade has bought very satisfactorily. There has been little to note with reference to cast iron pipe during the week. The scrap market is quiet except for a demand for railroad malleable, and pig iron is attracting but very little attention. Prices, especially for structurals, bars and plates, are none too well established and shading is not infrequently encountered. The election is being commonly used as an excuse for delays of all kinds in placing business, but already rumors of readjustments and proposed retrenchments give promise of more real reasons for further delay after the election is over, which ever way it may go.

Pig Iron.—The pig iron market is very quiet, the largest transaction recorded for the week being 800 tons bought from a local furnace by the Link-Belt Co. The 1,300 tons of malleable Bessemer purchased a week ago by the Harvester company was also obtained from a local furnace. The price for both of these tonnages was less than $17 delivered. Stocks in melters' yards are not large and it is probable that even with the larger interests not more than a month's supply is now on hand. Practically all of the northern iron now being purchased is for early delivery, but there is little prompt shipment iron from the south in demand. The market on northern No. 2 is $16.50, and at this price is very cheap as compared with southern, which is held at $13 Birmingham or $17.35 delivered Chicago. While some of the southern furnaces are undoubtedly piling iron and the amount of iron that is moving on new sales from the south is very unsatisfactory, the southern price is being held very firmly and no effort is being made to book first quarter business. With northern iron held at a minimum of $17 furnace for the first quarter, it is more likely that the present differential between the north and south will disappear by reason of a mutual approach in price rather than by an increase of $1 in the price of northern iron. We quote as follows:

Lake Superior charcoal	$19.50
Northern foundry No. 1	17.00 to 17.50
Northern foundry No. 2	16.50 to 17.00
Northern foundry No. 3	16.00 to 16.50
Southern foundry No. 1	17.35 to 17.85
Southern foundry No. 2	16.85 to 17.35
Southern foundry No. 3	16.35 to 16.85
Southern foundry No. 4	15.85 to 16.35
Southern No. 1 soft	17.35 to 17.85
Southern No. 2 soft	16.85 to 17.35
Southern gray forge	15.60 to 16.10
Southern mottled	15.35 to 15.60
Southern silveries, 4 per cent silicon	17.85 to 18.35
Southern silveries, 5 per cent silicon	18.35 to 18.85
Southern silveries, 6 per cent silicon	18.85 to 19.35
Jackson Co. silveries, 6 per cent.	19.40 to 19.90
Jackson Co. silveries, 8 per cent.	20.40 to 20.90
Jackson Co. silveries, 10 per cent	21.40 to 21.90
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.65 to 18.15
Alabama Basic	16.85 to 17.35

Billets and Rods.—With the sale of about 9,000 tons of forging billets by the leading producer to the Standard Forgings Co. and the closing of the

large contract by the Inland Steel Co. announced last week, the month of September shows the best tonnage of billet sales for a considerable period. The increased car buying by several of the railroads will also bring a fair tonnage into the market this month. Contract business in wire rods is running about normal. There is no outward evidence that special prices are being made on billets in this market and we quote 4 x 4-inch rolling billets $26.50, and forging billets $28.50, base Chicago. We quote, f. o. b. Pittsburg, Bessemer wire rods, $33; open-hearth, $35; and chain rods, $33.

Merchant Steel.—Operating on a reduced and intermittent schedule, the mills in this territory are turning out from 55 to 60 per cent of their capacity. Last week the Inland mill of the Republic Iron & Steel Co. was running, but this week is entirely down. The 8 and 10-inch mills at the Tudor plant, St. Louis, are operating and the Sylvan mills at Moline are running full on single turn. The Interstate Iron & Steel Co. mill at East Chicago is gradually decreasing the amount of idle time. The mills at Terre Haute and Vincennes, Ind., are reported as increasing their operations and in general the mill activity in this territory is estimated to be about 60 per cent of normal. Steel bar specifications hold up very well. The condition of the leading interest's books may be taken as an index, inasmuch as they carry the largest part of the contract tonnage and they show that bar specifications in September doubled as compared with August. Increase is also noted in the demand for reinforcing steel bars. The approach of severe weather is rushing building operations where concrete is used and orders for quick delivery are coming in quite freely. Bar iron is fairly quiet, as it has been. We quote as follows:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth-finished tire steel, 1.78c; iron finish, up to 1½ x ½-inch, 1.73c base tire card; iron finish, 1½ x ½-inch and larger, 1.58c base steel card; channel for solid rubber tire, ¾ to 1-inch, 2.08c, and 1⅛-inch and larger, 1.98c; smooth finished machinery steel, 1.83c; flat sleigh shoe, 1.63c; concave and convex sleigh shoe, 1.83c; cutter shoe, 2.05c; toe calk steel, 2.13c; railway spring, 1.93c base steel card; vehicle spring steel, 1.98c base, vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.90c to 2c, full extras; soft steel bars, 1.80c per 100 pounds base, plus half extras; soft steel hoops, 2.30c, full extras.

Plates.—The month of October promises some very good plate tonnages as the result of the continued buying of steel cars by a number of the western railroads. Already orders are being placed and if all the inquiries that are now being figured on materialize into orders, a considerable tonnage will be placed. The order for 1,000 cars by the Chicago & Alton placed with the Standard Steel Car Co. resulted in the ordering this week of 9,000 tons of plates and structurals from the leading interest, and the same road is considering duplicating its order. The Iowa Central has ordered 50 all steel side dump coal cars from the Pressed Steel Car Co., and the Birmingham Southern is in the market for 150 50-ton hopper bottom cars to have steel bodies and underframes. The Pullman Co. is figuring on an inquiry for 220 all steel passenger cars for the Harriman lines. Together with structurals and bars the prices on plates are very irregular in this territory. We quote as follows:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.78c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 to 96 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.15c; 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.10c to 2.15c. Flange and head quality, 25c extra.

Sheets.—The consumption of sheets continues to manifest goodly proportions, especially as regards galvanized. The local mill is running up to 60 per cent of capacity and has a very satisfactory tonnage booked. We quote store prices. For mill prices see Pittsburg report.

No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, No. 10 to 16, 3.05c to 3.10c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

Structural Steel.—The week has not brought out very much new tonnage, the only lettings of importance being the St. Louis post office, requiring 1,355 tons, which will be furnished by Brown & Ketchum Iron Works, Indianapolis, and 2,000 tons of bridge structurals for the Northern Pacific railroad, which contract was awarded to the McClintic-Marshall Co. The plans for the new Chicago city hall are out, calling for about 12,000 tons, and bids will be received early in November. Prices on structurals are pretty wobbly. The Bettendorf Axle Co. awarded the contract for 12,000 tons of the structurals they will require for railroad contracts from the Illinois Steel Co. this week. The month of September as compared with August showed a total tonnage of orders for structural steel received by the mills that nearly trebled that received in August. This very good showing comes as a surprise following the early quiet in September. We quote as follows:

All angles, 3 inches and larger, including 6 inches, $1.95 per 100 pounds; angles over 6 inches, $2.05 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.95 per 100 pounds, base; channels, 3 inches and larger, $1.95 per 100 pounds, base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—The leading interest received specifications from the Northern Pacific railroad during the week for 5,000 tons of standard section rails, and also sold for immediate delivery 700 tons of heavy rails to the Harbor Land & Lumber Co., at Manitou Island, Mich. An order for 2,000 kegs of spikes was received from the Illinois Central, 2,000 kegs from the Missouri Pacific, and 1,200 tons of continuous joints from the Southern Pacific. September business shows a gain of about 1,200 tons of heavy rails over August and a like gain in light rail sales. The sales of spikes and bolts show an increase of 10,000 tons over the preceding month. The Alabama, Tennessee & Northern is on the market for about 3,800 tons of 60-pound rails. We quote as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $26; 20-pound, $27; 16-pound, $28; 12-pound, $29. Track supplies, f. o. b. Joliet, angle bars,

1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.10c to 2.20c; with hexagon nuts, 2.25c to 2.35c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Merchant Pipe and Boiler Tubes.—Some little specifying for material to be shipped by water route has been received during the week, but not in the expected volume. It is estimated that the month of September produced about the same amount of business as was taken during August.

	—Steel— Black.	Galv.
¼ to 6 inches, inclusive.....	73.2	63.2
7 to 12 inches, inclusive.....	70.2	55.2

BOILER TUBES.

	Steel.	Iron.	less.
2¼ to 5 in., inclusive....	63.2	50.2	50.2

Cast Iron Pipe.—There is practically nothing to report in this territory with regard to cast iron pipe. The small tonnage, 200 tons, at Decatur, Ill., will go to the United States Cast Iron Pipe & Foundry Co. as low bidder. The Winfield, Kans., job for a like tonnage was placed with a contractor who is now figuring for his pipe. The only letting to come up this week is one for 900 tons at Hope, Arkansas. The demand for gas pipe is very light. We quote without change as follows: 4-inch pipe, $27; 6 to 12-inch, $26; larger sizes, $25. Gas pipe, $1 a ton higher.

Wire Products.—The last week saw the closing of a number of contracts and very good specifying by manufacturers. In general, the demand for wire goods is reported as decidedly good and the situation appears to be very strong in this direction. We quote:

Wire nails, jobbers carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c; and to retailers in carloads, 1.85c.

Old Material.—The general market movement in scrap is quiet. Mills are buying conservatively as bargains appear. The increased amount of railroad car work being done has induced a better demand for railroad malleable. The brisk inquiry for reinforcing steel is a strengthening influence. The railroads are offering a considerable quantity of scrap and the lists out this week include 2,123 tons from the Santa Fe, a little over 200 tons from the Wisconsin Central and about 4,000 tons from the Chicago & Northwestern Railway. Of this latter list 1,100 tons are old rails, some of which are in unusually good condition. We have revised our prices and quote as follows:

Old car wheels	$15.25 to 15.75
Old iron rails	18.00 to 18.50
Re-rolling rails (4 ft. and over)	15.50 to 16.00
Old steel rails (4 ft. and under)	14.75 to 15.25
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	13.50 to 14.00
Heavy melting steel	13.00 to 13.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.50 to 14.00
No. 2 R. R. wrought	12.50 to 13.00
Knuckles, couplers and springs	13.00 to 13.50
Shafting	16.00 to 16.50
Iron car axles	19.50 to 20.00
Steel car axles	17.25 to 17.75
Dealers' forge No. 1	10.50 to 11.00
Pipes and flues	9.75 to 10.25
No. 1 cast, 150 lbs. and less	13.25 to 13.75
No. 1 mill	8.00 to 8.50
Mixed busheling (Nos. 1 and 2)	8.25 to 8.75
Country sheet	4.50 to 5.00
No. 1 boiler cut	8.50 to 9.00
Boiler punchings	11.50 to 12.00
Cast borings	5.25 to 5.75
Mixed borings, etc	5.25 to 5.75
Machine shop turnings	7.00 to 7.50
Railroad malleable	12.50 to 13.00
Agricultural malleable	11.00 to 11.50
Stove plate and light cast scrap	11.50 to 12.00
Old iron splice bars	16.75 to 17.25

CLEVELAND.

Ore and Pig Iron Quiet—One Large Transaction in Plates and Shapes.

Office of THE IRON TRADE REVIEW,
Browning Building, Oct. 6.

Iron Ore.—Shipments from the Lake Superior region for September amount to 4,646,024 tons, compared with 4,749,655 tons in August, and 6,217,653 tons in September, 1907. Shipments to Oct. 1 amount to 16,630,960 tons, a decrease of 45.58 per cent compared with the same period last year. The movement for October will be about 4,000,000 tons. The ore on docks Dec. 1 promises to be the largest tonnage on record. Shipments for three years by ports have been as follows:

Port.	Sept., 1906.	Sept., 1907.	Sept., 1908.
Escanaba	833,681	742,251	654,679
Marquette	411,582	417,684	245,708
Ashland	384,968	407,572	483,959
Superior	869,678	1,155,464	541,235
Duluth	1,750,116	2,203,638	1,617,134
Two Harbors	1,179,636	1,291,044	1,103,307
	5,429,660	6,217,653	4,646,024
	To Oct. 1, 1906.	To Oct. 1, 1907.	To Oct. 1, 1908.
Escanaba	4,270,294	4,473,417	2,006,192
Marquette	2,120,519	2,342,149	871,107
Ashland	2,636,025	2,722,331	1,521,146
Superior	4,448,174	5,571,918	2,264,443
Duluth	8,334,388	9,406,283	6,201,121
Two Harbors	6,341,357	6,043,108	3,766,951
	28,150,755	30,559,206	16,630,960

The ore market continues quiet. We note the closing of one transaction of 80,000 tons, which has been pending for some time, and another of 30,000 tons. No large inquiries are pending.

On base ores, with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—Most sellers report the market very quiet, with little prospect of improvement. An inquiry for 800 tons of malleable is pending, and a larger tonnage of malleable has been sold recently than for some time previous. Although there is little buying, iron is being delivered very promptly and the melt seems to be about equal to the iron which has been contracted for. Furnaces are not inclined to sell for next year's delivery at present quotations. The new stack of the Jackson Iron & Steel Co., Jackson, O., has been blown in and will make a high silicon iron to be known as "Jisco." Pickands, Mather & Co. are sales agents. The stack of the Upson Nut Co. has been blown out and will be relined, after being in operation two and a half years. We quote, f. o. b. Cleveland, as follows:

Bessemer	$15.90 to 16.15
No. 1 foundry	15.40 to 15.80
No. 2 foundry	15.25 to 15.50
No. 3 foundry	14.90 to 15.25
No 2 southern	16.35 to 16.85
Gray forge	14.00 to 14.50
Lake Superior charcoal	19.50 to 20.00
Jackson Co. 8 per cent silvery	20.05

Coke.—The market is somewhat stronger, not on account of increased demand, but owing to curtailed operations due to the drouth in the Connellsville region. We quote spot furnace coke $1.50 to $1.60, and on shipments over the remainder of the year, $1.70 to $1.80. Foundry coke we quote at $2.00 to $2.25 for both prompt and forward delivery.

Finished Material.—With the exception of one transaction for about 5,000 tons of plates and shapes, the market has been very quiet. Considerable mystery envelops this transaction and the order may be cancelled after the election. Inquiries are not as numerous as they were two or three weeks ago. Iron mills are having difficulty in keeping in operation. Some industries seem to be much more busy than others. One large bridge building concern reports that its business is smaller than at any time this year, while, on the contrary, an Ohio steam shovel concern is well supplied with orders. Rumors of cutting by an important western company on steel bars are current.

Old Material.—Dullness has been a continued characteristic of the market, and still is its chief feature. Some small sales of material, almost altogether steel, have been made to the mills, but the quantities have been small and with slight prospects of immediate increase. While no price changes in actual figures have been

noted in the past week, there is an appreciable softening especially in cast iron materials. We continue to quote, f. o. b. Cleveland, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (re-rolling)	15.00 to 15.50
Old steel rails (under 6 ft.)	15.00 to 15.50
Old car wheels	15.00 to 15.50
Old steel boiler plate	12.50 to 13.00
Steel axles	18.00 to 18.50
Malleable iron (railroad)	13.00 to 13.50
Malleable iron (agricultural)	11.50 to 12.00
Heavy steeel	13.75 to 14.25
Country mixed steel	12.00 to 12.50
Low phosphorus	16.00 to 16.50
We quote, net tons, as follows.	
No. 1 R. R. wrought	13.50 to 14.00
No. 1 busheling	12.00 to 12.50
No. 1 machine cast	12.00 to 13.00
Iron axles	17.00 to 18.00
Axle turnings	9.50 to 10.00
Machine shop turnings	7.50 to 8.00
Grate bars	11.00 to 11.50
Pipes and flues	11.00 to 11.50
Tank iron	11.00 to 11.50
Hoop and band iron	8.00 to 8.50
Sheet iron	6.00 to 6.50
Wrought drillings	7.50 to 8.00
Stove plate	11.00 to 11.50
Cast borings	7.00 to 7.50

CINCINNATI.

Dull Week in Pig Iron and Some Shading Has Been Done.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Oct. 6.

Pig Iron.—Another week of dullness and inactivity has passed in the pig iron market and the situation remains without material change. There appear to be no important inquiries under consideration and no large sales are reported as having been made through this market. A central Ohio manufacturer is asking for prices on 300 tons for prompt shipment. An Indiana melter is in the market for 400 tons for next year's delivery and a western Ohio manufacturer is calling for 500 tons for next year's delivery. These inquiries represent about the largest tonnages pending, although it is understood that the leading interest in cast iron pipe is making some firm offers on southern iron at prices below furnace views. The disposition of buyers appears to be to cover as far into next year as they can and the attitude of furnaces is to resist commitments beyond the first quarter of next year; this is especially true of the southern producers. Prices remain at $12.50 Birmingham for southern iron and $14.75 Ironton for northern iron as minimum quotations; but while these figures are the lowest open quotations, some southern iron has been sold in a quiet way at less than $12.50. High silicon 8 per cent remains quotable at $18.50 Jackson county furnace, and some firm offers at less than this figure have been turned down. Low grades of southern iron are comparatively firm and one of the large southern producers has nothing in the way of low grades below No. 3 foundry to offer for the remainder of the year. It is quite freely suggested that the present apathy on the part of buyers is due to the uncertainties surrounding the presidential election; in fact, some orders have been taken for southern iron with the privilege of cancellation in case of the failure of Mr. Taft to succeed to the presidency. We quote for prompt delivery and remainder of the year, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

Southern foundry No. 1	$16.25 to 16.75
Southern foundry No. 2	15.75 to 16.25
Southern foundry No. 3	15.25 to 15.75
Southern foundry No. 4	14.75 to 15.25
Southern No. 1 soft	16.25 to 16.75
Southern No. 2 soft	15.75 to 16.25
Southern gray forge	14.25 to 14.50
Northern No. 1 foundry	16.45 to 16.95
Northern No. 2 foundry	15.95 to 16.20
Northern No. 3 foundry	15.45 to 15.70
Northern 8 per cent silicon	19.70

Finished Material.—Specifications on contracts are fair and business at the stores among jobbers shows gradual improvement. There has been no change in retail prices and small orders are filled here at the following quotations:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16-inch, 2.10c; No. 8, 2.15c; sheets, blue annealed, No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c; and No. 28, 2.85c to 2.95c; boiler tubes, 2¾ to 5 inches, 62 per cent off base; turn-buckles, 45 per cent off, rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Coke.—There is but little interest in the market, as few contracts are under consideration and the supplies of spot coke are ample for the wants. Prices in the leading coke producing districts remain as follows.

	PER TON.
Wise county furnace coke	$1.75 to 1.85
Wise county foundry coke	2.10 to 2.25
Pocahontas furnace coke	1.60 to 1.75
Pocahontas foundry coke	2.00 to 2.25
Standard Connellsville furnace coke	1.75 to 1.80
Standard Connellsville foundry coke	2.00 to 2.25
Connellsville district furnace coke	1.60 to 1.65
Connellsville district foundry coke	2.00 to 2.25

Old Material.—Supplies are fairly well concentrated in dealers' hands and are firmly held, although the general market is quiet and the calls for melters are moderate. Dealers' prices to consumers here are as follows:

Old No. 1 R. R. wrought, net tons	$11.50 to 12.50
No. 1 machinery, net tons	12.50 to 13.00
Old iron rails, gross tons	15.00 to 16.00
Old steel rails (re-rolling) gross tons	15.00 to 15.50
Old short lengths, gross tons	14.00 to 14.50
Old iron axles, net tons	17.00 to 18.00
Heavy melting scrap, gross tons	12.50 to 13.50
Stove plate, net tons	10.00 to 10.50
Wrought turnings	5.50 to 6.50
Cast borings, net tons	4.50 to 5.00
Car wheels, gross tons	14.00 to 14.50

PHILADELPHIA.

Little Activity in Pig Iron, But Prices Are Firm.

Office of THE IRON TRADE REVIEW,
408 Central Trust Bldg., Oct. 6.

Pig Iron.—The market shows the same indifferent aspect that has characterized it for the past couple of weeks. Prices, however, remain firm, without change. There is less iron being sold at the lower figures quoted, though round tonnages under certain conditions might still be had at the bottom prices. The greatest strength shown is in basic. Some special analysis iron has been sold at a price about 75 cents above the market. On the whole, the month of September about held its own in this territory with July and August, but this was due to heavy sales of basic. The foundry grades fell off. The call for the latter is still in small lots for prompt shipment. A salesman for a large interest who has been on a trip up the state reports that the foundries are nearly all working full time, but are not much behind on orders, finding sufficient new business from day to day to keep in operation. They complain, however, of the prices made in other territories with which they compete. The Temple furnace of the Temple Iron Co., Reading, Pa., is reported as back in blast, as is also No. 1 furnace of the Lackawanna Iron & Steel Co. at Lebanon, Pa. We quote as follows, delivered, eastern Pennsylvania and surrounding territory:

No. 1X foundry	$17.25 to 17.75
No. 2X foundry	16.75 to 17.25
No. 2 plain	16.25 to 16.75
Standard gray forge	15.50 to 16.00
Basic	16.00 to 16.50
Low phosphorus	21.00 to 21.50
No. 2 Birmingham	17.25 to 17.75
No. 2X Virginia	17.00 to 17.25
No. 2 plain Virginia	16.50 to 16.75

Finished Material.—There is practically no change in the finished material market. The Maryland Steel Co. is running on plates and shapes for three colliers which that company is to build for the government, while figuring is being done on similar work for the new battleships. In structural lines, the most notable business in prospect is the steel for the proposed new building for the Curtis Publishing Co. We quote as follows: Structural, 1.75c to 1.90c; plates, 1.75c to 1.80c; refined iron bars, 1.45c to 1.50c; steel bars, 1.55c.

Old Material.—Between 10,000 and 15,000 tons of No. 1 steel scrap has been

purchased by three of the steel companies in this territory during the past week at $15 and $15.50. Otherwise the market is dull. We quote as follows:

Old steel rails (re-rolling)	$16.50 to 17.00
No. 1 steel scrap	15.00 to 15.50
Old steel axles	21.00 to 22.00
Old iron axles	22.50 to 23.50
Old iron rails	19.00 to 19.50
Old car wheels	15.25 to 15.75
Choice scrap R. R. No. 1 wrought	18.00 to 18.50
No. 1 yard scrap	16.00 to 17.00
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	18.50 to 19.00
Wrought iron pipe	14.00 to 14.50
No. 1 forge fire scrap	13.00 to 13.50
No. 2 forge fire scrap, ordinary	9.00 to 10.00
Wrought turnings	11.50 to 12.00
Axle turnings, heavy	12.75 to 13.25
Cast borings	10.75 to 11.25
Stove plates	13.00 to 13.50

NEW YORK.

Pig Iron Business Confined to Small Orders.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Oct. 6.

Pig Iron.—With the bulk of melting requirements for the remainder of the year provided for, the pig iron trade in this district and New England manifests little activity, current business being made up chiefly of orders ranging from 100 tons downward. There has been one sale of 2,000 tons to a Connecticut consumer and a few inquiries for round tonnages are current, but in the main the situation is as stated. The foundry melt continues to show a slight increase, although this is less marked in the case of jobbing foundries than of foundries connected with manufacturing plants, which are finding the outlook sufficiently bright, in many instances, to begin accumulating stocks. The spurt of activity in pig iron buying for Eastern Pennsylvania and New Jersey plants, noted a week ago, seems to have spent itself; its bearing on the general situation, however, was not important, as it practically all went to one interest. One of the Lebanon furnaces of the Lackawanna Steel Co. has been blown in on merchant iron, and its influence is already being felt, particularly in the New England market. Prices remain unchanged and we quote, fourth quarter delivery at tidewater, as follows:

Northern foundry No. 1	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	15.75 to 16.25
No. 2 southern foundry	16.75 to 17.25
Malleable	17.00 to 17.50
Basic	15.75 to 16.25
Gray forge	15.50 to 16.00

Ferro-Alloys.—A sale of 200 tons of low grade ferro-silicon for shipment into the Chicago district is reported, and moderate inquiries are current for 50 per cent, on which the price continues $67.00 to $69.00, Pittsburg. In ferro-manganese there is a good run of small orders, and the price level remains firm at $43.00, seaboard.

Finished Materials.—Several projects which have been up for some time, now promise definite action at an early date. Bids on the second section of the Grand Central station, requiring about 800 tons of steel, and on the Ritz-Carlton hotel, calling for slightly under 5,000 tons, go in this week. A brewery at Twenty-sixth street and Tenth Ave., for which C. F. Hettinger & Co., Boston, are engineers, will require about 1,000 tons. Another building for the Martin interests on Thirty-second street, calling for a good tonnage, is pending, and considerable steel will be used at Paterson, N. J., where several silk and woolen mill projects have developed. The Jones & Laughlin Steel Co. took the contract for a 400-ton office building at Syracuse, the Hay Foundry & Iron Works a small bridge for the Central Railway, and the Ridgwood traction bridge, requiring 175 tons of 30-inch beams, went to the F. M. Stillman Co. Although not yet placed, there is every reason to believe that the Emigrant Savings Bank contract will go to Milliken Bros., and that Bethlehem steel will be employed.

The receivers of Milliken Bros. have taken the ornamental work for important building work at the Rockefeller Institute, this city, for which Levering & Garrigues will furnish the steel, about 700 tons. Additions to the Havana abattoir contract recently taken by the Milliken interests practically double that undertaking. Bethlehem steel will be used in two other Milliken contracts, 1,600 tons for the Martin building, in this city, and 400 tons for the Richelieu Hotel in San Francisco. Another Milliken contract is the steel for the Ardelle apartments on Riverside Drive, 400 tons. About 400 tons of plain materials for a Brooklyn school has been placed with an eastern steel interest. Bids are going in on about 4,000 tons of steel work for the Cincinnati Southern viaduct in Cincinnati, and on about 2,000 tons in connection with subway extensions in New York.

It is figured that the Baltimore sewage disposal plants, bids on which will be opened Oct. 14, will require 2,000 tons of cast iron pipe, principally 42-inch. The Verona, N. J., contract, 1,000 tons of 6 to 12-inch, went to the United States Cast Iron Pipe & Foundry Co. at $22.95, delivered. The Passaic, N. J., letting is Oct. 30 and involves a big tonnage.

There has been some little activity in billets, 1,250 tons being taken recently by a New Jersey manufacturing plant at full prices. A lot of 5,000 tons has been purchased by a railway equipment company in addition to the 25,000 tons reported last week as placed with a western interest. Plates are not active. Bar iron continues slightly stronger. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.76c; beams, 3 to 15 inches, 1.76c; tees, 3 x ¼-inch and heavier, 1.81c; plates, carloads, tanks, 1.76c; marine boilers, 2.16c; bar iron, 1.41c to 1.46c; soft steel bars, 1.56c; sheets, No. 28, black, 2.66c.

Old Material.—The market is quiet, and apparently weaker. Mills are out of the market, either because they do not need additional scrap or because they are unwilling to meet the prices asked by dealers. On the other hand, yards are practically bare of saleable material, as a considerable tonnage is sold and held to await purchaser's order. Railway lists for October offer fairly large tonnages. We quote gross tons, New York delivery, as follows:

Old iron rails	$17.50 to 18.00
Old steel rails, re-rolling	14.00 to 14.50
Relaying rails	20.50 to 21.50
Old car wheels	13.50 to 14.00
Old iron car axles	18.00 to 18.50
Old steel car axles	17.00 to 17.50
Heavy melting steel	12.50 to 13.00
No. 1 railroad wrought	15.00 to 15.50
Iron track scrap	12.50 to 13.00
Wrought pipe	10.50 to 11.00
Cast borings	8.00 to 8.50
Wrought turnings	8.50 to 9.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	13.00 to 13.50
Stove plate	10.50 to 11.00
Grate bars	10.50 to 11.00

BUFFALO.

Pig Iron Very Dull—Electric Railway Projects Held Up.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Oct. 6.

Pig Iron.—It is generally conceded that the market is inactive, varying scarcely a shade from the week preceding. There is no present indication of a change in quotations and selling goes on indifferently, but at prices quoted. Sales of large tonnage were not reported the past week. The ordinary run of business, characteristic of the present market, continues as before, most orders being placed for a few hundred tons, car lots and an occasional purchase of 1,000 tons of foundry iron. The demand for foundry iron coming from down the state continues quiet, but has not fallen off. Although the Buffalo market is experiencing a dull period, it cannot be referred to as a slump market. Prices are reasonably firm and have not varied. We quote f. o. b. Buffalo as follows:

No. IX foundry	$16.00 to 16.50
No. 2X foundry	15.50 to 16.00
No. 2 plain	15.00 to 15.50
No. 3 foundry	15.00 to 15.50
Malleable Bessemer	16.00 to 17.30
Gray forge	14.75 to 15.25
Charcoal	20.25 to 20.75

Finished Products.—Lately there has been a good deal of activity in the steel rail market here and some heavy inquir-

ies were received from down state electric lines contemplating extension or building. Today, however, it was stated that these negotiations had come to a standstill and probably would remain inactive until after presidential election. In bar and other products the market is quiet. There are several prospective orders of size in sight which are now taking the attention of the local steel company representatives. A new $800,000 hotel is to be built at once in Syracuse, N. Y., by the Onondago Hotel Co.

ST. LOUIS.

Pig Iron Continues Dull, But Prices Have Not Changed.

Oct. 5.

Pig Iron.—The pig iron market is dull in the St. Louis territory, but dealers generally assert that No. 2 is stiff at from $12.50 to $13, Birmingham. By some it is contended that iron can be bought for $12.50, Birmingham, while others insist that $13 is the selling price, and that it will remain firm until after the presidential election. There is practically no new business in the market, but there are indications that some may develop this week or the first of next week. Several inquiries that were out last week, aggregating 1,000 tons, have been placed. There is something of a scarcity of No. 1 soft iron, and a premium of from 25 to 50 may be secured on that grade.

Our quotations delivered, to which the freight of $3.75 from Birmingham has been added, follow:

No. 1	southern	$16.75 to 17.25
No. 2	southern	16.25 to 16.75
No. 3	southern	15.75 to 16.25
No. 4	southern	15.25 to 15.75

Coke.—Prices for best selected 72-hour Connellsville foundry coke are firm at $2.25 to $2.75, ovens, both for immediate and future shipment. Connellsville 48-hour furnace coke can be had at from $1.50 to $2, ovens. There are some few inquiries for foundry for shipment over the remainder of the present year and the first quarter of 1909, and orders probably will be placed this week or during the early part of next week. Virginia and West Virginia 72-hour coke is quoted the same as last week, $2.25 to $2.50, ovens, for 72-hour foundry coke and $1.75 to $2, ovens, for 48-hour furnace coke. The freight rate from Connellsville and the Virginia fields is $2.80 to East St. Louis and St. Louis, and $2.70 from the Virginia fields when destined beyond St. Louis.

Old Material.—Slight advances in quotations have been made on several items of the scrap iron market in St. Louis, and the business generally indicates a picking up. Our quotations follow:

Cast iron borings, free from foreign material, net ton	$ 6.00
Steel axle turnings, gross ton	12.25
Steel railroad axles, net ton	$17.50 to 18.50
Iron railroad axles, net ton	19.00 to 20.00
Miscellaneous steel scrap, gross ton	12.25
Old car wheels, gross ton	15.00 to 16.00
No. 1 railroad cast scrap, net ton	12.00 to 12.50
Heavy machinery cast, net ton	13.00
Stove plate and light cast, net ton	11.50
Sheet iron, net tons, uncut	5.00
No. 1 railroad wrought, net ton	12.00 to 13.00
Railroad malleable, net ton	11.50
Heavy melting steel, net ton	11.50

BIRMINGHAM, ALA.

Demand for Pig Iron Limited, But Prices Are Firm.

Oct. 5.

The southern pig iron market continues slow as far as demand goes, but there is great confidence expressed in the future, and all efforts are being given to an improved production. Two furnaces should be ready for the torch or in operation by the end of this week and a third furnace a few days later. Then towards the end of the month, two other iron makers should be making iron, five furnaces in all on the calendar for resumption this month. It is asserted that there are no less than 10 furnaces in Alabama, and one in Tennessee, and one in Georgia which will be put in condition and started up between now and the end of the year. Positively no apprehension is expressed that there will be any accumulation of the product. According to J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co., the hesitation caused by the political campaign is being met with the offer of an option to all consumers to cancel orders if the election in November does not result as expected by the buyer of the iron. The make at furnaces in operation at present is most satisfactory. The supply of raw material in the Birmingham district is steady and preparations are being made to keep the same up. .

The iron quotations in the southern territory remain firm between $12.50 and $13 per ton, No. 2 foundry. There is no inclination to make big concessions to get business, but instead the business will come in by itself after this month, it is believed here.

BRITISH IRON MARKET.

No Advance in Pig Recorded, But Market is Firm.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., Sept. 27.

Generally speaking, pig iron is holding its own. There are no further advances to record, but the market is very firm, mainly because makers are booked well to the end of the year, and in the Midlands there have been substantial withdrawals from stocks. Very few smelters are now wanting orders. In Cleveland, there have been slight fluctuations, but the week closes as it began with No. 3 Cleveland selling at 51s 6d ($12.60) or thereabouts. The fact that for three months the figure was 51s 4½d ($12.59) shows increasing confidence as to the future. There have been quiet days during the week, but makers have not been anxious to sell. The end of the engineers' strike has strengthened the market for hematite, and there is a little improvement in ship building. The regular quotation on the East Coast is 57s 6d ($14.08) although some are quoting for next year at 60s ($14.68). The Cleveland stores continue to increase, this month's additions being 8,052 tons, making the total 70,015 tons. The weak place in the situation is that the makers of manufactured iron have quite failed to get any increase in price. The lack of specifications also in the Midlands is retarding pig iron deliveries.

METAL MARKET

ST. LOUIS.

Oct. 5.

Lead and Zinc.—One of the most extensive mine operators in the Webb City portion of the Missouri-Kansas district asserts as his belief that the price of lead will strengthen during the next several weeks, basing his opinion on private advices from the large lead markets to the effect that prices will stiffen. This operator is holding his lead output and quite a number of operators in the district are inclined to follow his example.

The average price of zinc was a little lower last week, the high price reached being $38.50 a ton. This was paid for Joplin ore. Ore from the Blackberry brought $40.60 on an assay of $48, while the highest price paid for Webb City ore was $40 on an assay basis of $38 for 60 per cent zinc.

Zinc buyers showed no anxiety to buy ore, and quite a quantity of the ore was sold on an assay basis of $37 a ton Several bins of higher grade ore sold as high as $37.50, a few others brought $38, and one bin, where the ore assayed perhaps 51 per cent zinc, sold on an assay basis of $38.50. A majority of the producers disposed of their zinc on an assay base price of $36 a ton.

Lead brought $56 as the highest price, with an average price of $53 a ton.

There was a fair demand for silicate on a $20 a ton assay price for 40 per cent ore.

CHICAGO.

Oct. 6.

The movement of copper in carload lots has been fairly active, but not sufficiently so to support a proposed advance. Other metals have been quiet and we quote without change as follows:

Lake copper, carload lots, 14c to 14½c; casting, carload lots, 13¾c to 14c; pig tin, 32c to 32½c; spelter, 4.85c to 5c; pig lead, desilverized, 4.60c to 4.85c in 50-ton lots; corroding, 4.85c to 4.95c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc 7c, list f. o. b. LaSalle in car lots of 600 pound flasks; Cookson's antimony, 10c to 10½c; other grades, 10c.

Prices of scrap metals are subject to quality and condition of materials offered, but in general the market is too dull to admit of revision of our quotations. We quote to dealers as follows:

Copper wire, 11½c; heavy copper, 11½c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 8½c; light brass, 6½c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8¼c; tea lead, 3¾c; lead scrap, 4c; zinc, 3.10c; tin pipe, 25c; tin foil, 23c; pewter, 17c; electrotype plates, free from wood, 4c; electrotype dross, 2¾c; stereotype plates, 4¼c; stereotype dross, 3c; prime slab zinc dross, $55 per ton.

NEW YORK.

October 6.

Copper.—There has been some little activity in metal for export and domestic consumption has been about holding its own, but the price at which current sales are made manifests no change. Any large inquiry, however, would probably develop lower figures. We quote: Lake, 13¾c to 13⅝c; electrolytic, 13⅛c to 13⅜c; casting, 12⅞ to 13⅛c.

Pig Tin.—The London market has assumed an easier tone and in sympathy with this movement the local market has shaded off slightly. Dealers are doing some trading, but consumers are buying sparingly. The level is 29¼c to 29½c.

Pig Lead.—Rather insistent pressure to sell, particularly on the part of western interests, has sent prices downward slightly, and the market is weak at 4.42½c to 4.47½c, New York.

Spelter.—The short stocks in the hands of consumers are forcing moderate purchases, and the market continues without change. The current selling price is 4.72½c to 4.77½c, New York.

Antimony.—There is a little more activity. We quote: Cookson's 8¼c to 8½c; Hallett's, 7⅞c to 8⅛c; ordinary brands, 7½c to 7¾c.

ANNUAL REPORT OF THE CRUCIBLE STEEL CO. OF AMERICA.

The annual report of the Crucible Steel Co. of America for the year ending Aug. 31, 1908, which was published Oct. 6, shows that after charging off all expenses and notwithstanding a continuance of operating loss from Nov. 1, 1907, to June 30, 1908, the company was able to show an excess of direct operating profits over operating losses of $129,206.66. After providing for all contingencies and marking down of the inventories for the year, a net loss was shown of $520,024.54.

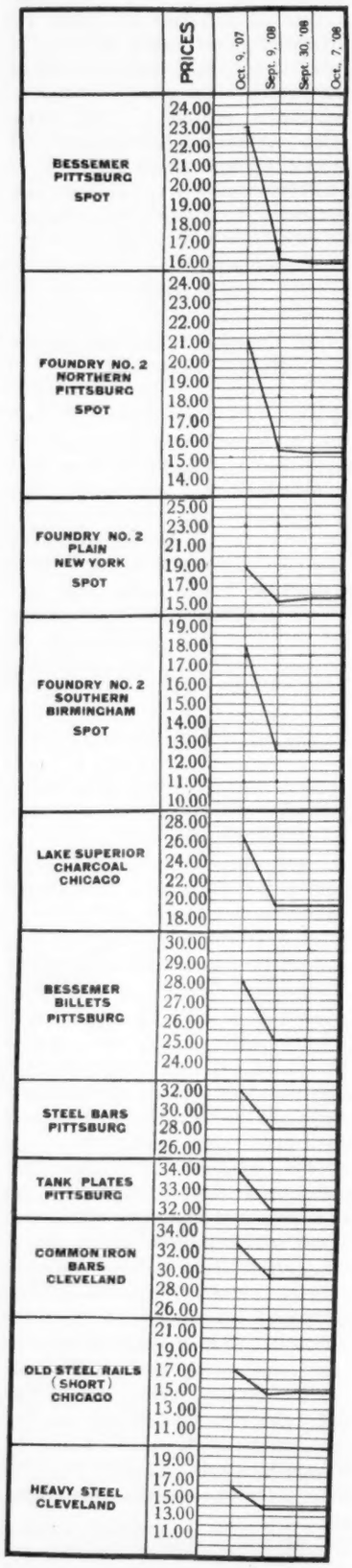
The following is the summary of the financial operations:

Operating profits for year		$129,206.66
Monthly provision for revision of inventory values		649,231.20
Net loss for the year		$520,024.54
Dividends on preferred stock paid Dec. 31	$244,365.00	
Expended for additions and improvements	168,973.07	
		413,338.07
Excess of payments and charges over operating profits		933,362.61
Decrease in Current Assets—		
In inventories		$1,751,040.60
Less Increases—		
In cash	$488,971.29	
In investments	159,600.00	
In deferred charges	21,933.71	
In accounts receivable in excess of increase in accounts payable	155,172.99	
		817,677.99
Balance as above		$ 933,362.61

The current assets on Aug. 30, 1908, amounted to $7,093,394.39, including $1,048,164.58 in cash, while current liabilities were reduced to $1,945,991.77, making an excess of current assets over current liabilities of $5,147,402.62, or $302,278.05 in excess of the total inventories. The tonnage of unfilled orders on hand is still below normal, being 72,984 tons, a decrease of 28 per cent compared with the unfilled contracts on hand Aug. 31 of the year before.

Leaves Wire Company.—John B. Howat, vice president and general manager of the Dillon-Griswold Wire Co., Sterling, Ill., has resigned, his resignation taking effect Oct. 1. Mr. Howat has become head of a manufacturing concern known as the Sharon Hardware Mfg. Co., Sharon, Pa., which he has just completed organizing. The Sharon company is now erecting a large building for the erection of hardware specialties.

PRICE CHART.



SMALL INCREASE IN PIG IRON PRODUCTION

Our blast furnace returns for September show a total production of 1,416,252 tons of anthracite and coke pig iron. This is an increase of 50,233 tons over August. The production is divided between merchant iron and non-merchant iron, as follows: Merchant iron, 468,359 tons, an increase of 17,846 tons; the non-merchant iron 936,997 tons, an increase of 40,592 tons. There was, however, a decrease in the production of spiegel and ferro, amounting to 8,205 tons.

This decrease in spiegel and ferro production is due to the fact that no spiegel or ferro was made in the states of Illinois and Tennessee, which were heavy producers last month. The stacks working on these products in August were put on basic and foundry pig iron in September.

The daily production was 47,208 tons, compared with 44,055 in August. The greatest increase in production was in New York state, there being an increase of 7,000 tons merchant iron and 17,000 tons non-merchant iron, approximately. Alabama showed an increase of 7,000 tons in merchant iron, and a decrease of about 2,000 in non-merchant. Pennsylvania and Ohio have very nearly the same total production of iron, there being a slight increase in non-merchant with a corresponding decrease in merchant iron. Virginia and New Jersey showed light decreases, while the Tennessee group showed an increase of about 11,000 tons. The Maryland group and Georgia group decreased their production 2,000 and 1,000 tons, respectively.

The number of active stacks in blast on the last day of September was 189, compared with 181 on the last day of August. The distribution of the new active stacks is as follows: Pennsylvania, 4; Alabama, 2; New York, 1; Tennessee, 2; Kentucky, 1; Colorado, 1; and Georgia, 1; Ohio, Virginia and Illinois each have one stack less in blast than on the last day of August. The percentage of active capacity in blast throughout the country was 46.3, compared with 43.3 in August.

The following table shows the production by months during the year:

	1908.	1907.
January	1,043,374	2,194,801
February	1,086,809	2,047,036
March	1,229,856	2,216,709
April	1,155,122	2,226,708
May	1,168,002	2,291,030
June	1,106,300	2,237,420
July	1,228,604	2,253,243
August	1,366,019	2,243,656
September	1,416,252	2,174,148
October	.....	2,359,690
November	.....	1,820,558
December	.....	1,234,733

SEPTEMBER FURNACE REPORT.

STATES—	NO. OF STACKS.	NO. IN BLAST ON LAST DAY OF MONTH. SEPT.	NO. IN BLAST ON LAST DAY OF MONTH. AUG.	PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE.	AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH.	ACTUAL TONNAGE MAKE. MERCHANT.	ACTUAL TONNAGE MAKE. NON-MERCHANT.	TOTALS. SEPT.	TOTALS. AUG.
Pennsylvania	153	76	72	48.3	21,135.6	122,040	486,320	608,360	607,384
Ohio	63	28	30	47.8	8,415.8	85,556	174,914	260,470	259,362
Alabama	46	22	20	45.2	4,527.6	98,101	30,324	128,425	123,424
Virginia	24	11	12	44.1	1,086.8	31,427	———	31,427	32,121
New York	24	13	12	50.9	3,755.7	52,012	54,046	106,058	82,891
New Jersey	9	2	2	22.2	551.4	16,544	———	16,544	19,866
Illinois	25	14	15	56.0	5,245.8	15,108	142,266	157,374	137,627
Tennessee	18	11	9						
West Virginia	4	1	1	40.9	1,293.7	29,163	6,201	35,364	24,028
Kentucky	7	1	0						
Maryland	4	2	2						
Wisconsin	6	1	1	39.2	1,717.8	6,164	42,926	49,090	51,962
Colorado	6	3	2						
Indiana	1	1	1						
Georgia	2	1	0						
Texas	3	0	0						
Minnesota	1	0	0	28.1	483.3	12,244	———	12,244	11,253
Michigan	2	1	1						
Missouri	1	1	1						
Spiegel—All states								4,834	8,039
Ferro—All states								6,062	11,062
Totals	399	189	181	46.3	48,213.5	468,359	936,997	1,416,252	1,366,019

BLAST FURNACE NOTES.

Lady Ensley stack of the Sloss-Sheffield Steel & Iron Co. was fired Sept. 21.

No. 1 stack of the Buffalo & Susquehanna Iron Co. blew in Sept. 23.

On Oct. 1 the Carnegie Steel Co. had 30 stacks blowing—one less than on Sept. 1.

The Cleveland Furnace Co. blew in its Cleveland, O., stack Sept. 4.

The Jackson Iron & Steel Co., Jackson, O., blew in its "Jisco" stack Oct. 5, on high silicon iron.

The Marting Iron & Steel Co., Ironton, O., blew out its Blanche furnace Sept. 10.

The Bethlehem Steel Co. is dismantling furnace "D," preparatory to replacing by an entire new stack.

The Midland Steel Co. expects to resume operating its Midland, Pa., No. 1 stack Oct. 10.

The Nittany Iron Co., Bellefonte, Pa., during the present shut-down of its Nittany furnace, is installing 1,800 horsepower additional boiler capacity and making general repairs to the plant.

The Shenango Furnace Co. lighted its stack No. 4 Sept. 28.

The Warwick Iron & Steel Co., Pottstown, Pa., fired its No. 2 stack Sept. 24.

The blast was turned on No. 1 stack of the Roane Iron Co.'s Rockwood, Tenn., stack Sept. 21. No. 2 furnace was shut down 11 hours on Sept. 18 for cleaning and taking out stops from gas flues.

The Rockdale Iron Co. put back its Rockdale, Tenn., stack on foundry iron Sept. 3, after having run through July and August on ferro-phosphorus.

The Warner Iron Co. expects to blow out its Cumberland, Tenn., stack about November for relining and repairs.

The Upson stack of the Upson Nut Co., at Cleveland, was blown out for relining Sept. 30. The stack had run along on the present lining for over two and a half years.

The Rome Furnace Co. blew in its Rome, Ga., stack Sept. 16.

The Temple Iron Co. blew in its Temple furnace at Reading, Pa., Oct. 2, after a considerable period of inactivity.

BRIDGE CONTRACT AWARDED.

(Special Telegram).

Pittsburg, Oct. 7.—The McClintic-Marshall Construction Co., this week took 2,600 tons for bridge work for a western railroad and a $175,000 general building contract at St. Louis. A proposed railroad bridge over the Mississippi at St. Louis, 8,000 tons, will close soon.

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GIVING THE RAILROADS A FAIR DEAL.

In every discussion of the current business depression, both as to its causes and the reasons for its continuance, the enforced absence of railroad purchasing is reckoned a factor of foremost importance. The percentage of the total production purchased by the railroads is often exaggerated, but in the steel trade particularly it was the sharp curtailment in the consumption of its products which contributed largely to the semi-paralyzed conditions of the winter months, and it is now the continued meager buying for railroad account which is preventing a return to approximately normal conditions in the industry. For these reasons, if for no others, iron and steel manufacturers throughout the country have reason for self-congratulation in the formation of the Railway Business Association, which is to undertake the formidable task of creating a more equitable public feeling toward the railways, securing for them a measure of fair play in matters of legislation, and rallying more effectively to their support the countless employes of railways and allied manufacturing interests.

All this is considerable of an undertaking. The railroads have been painted pretty black of late years, and restrictive legislation affecting them has been hustled through state and federal legislative bodies to the accompaniment of lusty popular applause. With heavily reduced revenues, many roads have found themselves face to face with imperative demands for better equipment, more adequate terminal facilities and other improvements involving immense expenditures. In this rapidly developing country, few roads can keep pace with the demands upon them by the expansion possible from their earnings year by year. Extensive borrowing has been necessary for practically all important extension work. Heavy increases in capitalization have been made and the popular impression prevails that there has been much over-capitalization. Makers of equipment, however, who are frequently called upon to accept these securities in payment for their products, assert that the average American railway is under-capitalized. However that may be, there is no doubt that present conditions practically render impossible the floating of railway securities at this time, and that these conditions are largely the outcome of repeated attacks of "predatory wrath," as emphasized by the chairman of the New York meeting at which the association was formed.

It is essential to square dealing that both sides be heard. For a good many months only one side of the railroad controversy has received much attention. Assailants of the railways have been numerous and, irrespective of their fitness to speak with authority, have been given a generous hearing and wide publicity. Replies to these attacks have been so few as to lead to the idea that no defense could be offered. The new association provides an effective, dignified and permanent method for the distribution of dependable information and forcing upon the public the consideration of the railroads' side of the case before judgment is rendered.

The new association promises to carry out its work on very frank, broad lines. No attempt will be made to condone any elements in the railway situation which are in need of reform; in fact, its efforts will be directed to assist in this movement. But vigorous opposition will be waged against ignorant, passionate, selfish attacks upon the railways in general, and efforts will be put forth to create a fairer, saner, more equitable public sentiment. The opportunity is large and the personnel of the association insures that the work will be well done. Ultimately the iron and steel trade should reap important benefits.

OUR FOREIGN COMMERCE IN AUGUST.

August iron and steel exports showed a rate practically identical with that in July, while imports showed a decrease of 5,000 gross tons from July.

The exports during July and August have run about 7,000 tons per month ahead of the average during the first six months of the year, while they have fallen about 23,000 tons behind the average rate during 1906 and 1907, when our heaviest exports were made. If the July-August rate of exports is maintained through the remaining months of the calendar year, it will show a total of a round million tons, against 1,325,740 tons in 1906, and 1,301,981 tons in 1907. As shown in last month's resume, there have been only five years in which our iron and steel exports passed the million-ton mark, these being 1900 and 1904-7, inclusive.

There has been no important change in individual items of export, comparing August with July, each line running at about the same rate.

Exports of crude steel, including ingots, blooms, billets, sheet bars, etc., amounted in August to 7,865 tons, against 8,465 tons in July. Except for February and March, when the totals were 22,000 to 23,000 tons, our crude steel exports have been running this year at a slightly less tonnage than last year, and evidently have com-

prised only the usual run of miscellaneous business. In February and March heavy shipments were made against the sheet bar contract last December, reported to be for 100,000 tons for equal deliveries over the first six months of this year, but no distinct trace of such business is found in the statistics for other months. It will be interesting to observe whether the recently reported sale of 56,000 tons of sheet bars for delivery over the last four months of this year will make a better impress upon the statistics. The total crude steel exports in the first eight months of this year amounted to 80,015 tons, against 59,044 tons in the corresponding period in 1907.

Imports Decreased.

The total tonnage of iron and steel imports in August was 13,186 gross tons, against 18,320 tons in July, and an average rate during the first six months of the year of 18,301 tons. Three items, pig iron, bar iron and tin plates, accounted for all of the drop, and a trifle more, some other lines showing slight increases. Pig iron imports in August amounted to 5,200 tons, a drop of 2,200 tons from the average of the preceding seven months; bar iron imports were 971 tons, a drop of 900 tons, and tin plate imports were 4,014 tons, a drop of 2,300 tons. The Standard Oil Co. is reported to have been a particularly heavy buyer of American tin plate for this season for its export trade, but this could have been only recently, as our tin plate imports in the first seven months of this year were more than 4,000 tons in excess of the imports in the first seven months of last year, and 15,000 tons in excess of the first seven months of 1906.

The imports of iron and steel in the first eight months of the year compare as follows:

Iron and Steel Imports, Gross Tons.

Eight months ending August,	
1903	1,011,049
1904	195,846
1905	251,650
1906	338,424
1907	544,934
1908	141,522

A reference to the detailed table of imports shows that practically the entire decline of 400,000 tons from 1907 to 1908 is in pig iron and scrap. These imports were special, to meet the exigencies of a sharp scarcity of crude material in the United States. In 1903, when more than a million tons of iron and steel were imported in eight months (the imports for the entire year were 1,178,796 tons) there was a still sharper scarcity of material, and the extra imports took the form, in addition to pig iron and scrap, of crude steel and of rails. In the first eight months of 1903 we imported 229,681 tons of crude steel and 85,077 tons of rails, while this year our imports of these materials have been negligible.

Value of All Exports.

While our exports of iron and steel products of which the tonnage is returned have been running almost one-fourth less this year than last, the valuation has been well maintained, and the iron and steel exports of which value only, and not weight, is returned, have shown a lesser decline. These other exports include a large line of machinery, builders' hardware, etc. The reported value of all iron and steel exports, including the tonnage lines, machinery, hardware, etc. (but not agricultural machinery), has been as follows:

Iron and Steel Exports, Value.

First eight months,	
1905	$ 90,768,479
1906	113,298,201
1907	129,400,247
1908	105,258,962

Thus while there has been a decrease in total value as compared with 1906 or 1907, there is an increase of $25,000,000 as compared with 1905. That increase is in the lines other than tonnage lines, since our tonnage exports this year are somewhat less than they were in 1905.

Iron and Steel Exports, Gross Tons.

	—August—		Eight months ending August,	
	1907.	1908.	1907.	1908.
Scrap	1,260	1,612	21,988	14,437
Pig iron	5,996	3,383	54,031	26,452
Billets, sheet bars, etc.	4,775	7,865	59,044	80,015
Wire rods	757	153	8,919	3,904
Rails	37,850	27,608	218,570	138,787
Structural iron and steel	13,111	10,409	90,039	81,910
Bar iron	1,244	659	17,743	4,801
Steel bars	6,671	2,817	47,737	28,639
Sheets and plates	7,535	10,767	85,172	67,162
Tin plates	848	164	8,206	11,331
Hoop, band and scroll	1,166	535	5,031	3,148
Wire	14,123	8,780	103,850	90,081
Wire nails and spikes	4,999	1,953	30,750	18,430
Cut nails and spikes	398	1,125	4,723	5,293
All other, including tacks	298	398	5,187	3,008
Pipes and fittings	17,761	9,016	100,674	76,563
Totals	118,792	87,244	861,664	653,961

Iron and Steel Imports, Gross Tons.

	—August—		Eight months ending August,	
	1907.	1908.	1907.	1908.
Scrap	5,853	260	22,553	3,262
Pig iron	34,263	5,200	420,117	56,941
Billets, bars and steel n. e. s.	1,285	1,006	10,374	6,653
Wire rods	2,084	1,390	12,674	7,796
Rails	213	41	2,826	1,051
Structural	127	83	1,959	1,470
Bar iron	4,106	971	27,039	14,316
Sheets and plates	210	187	2,802	1,524
Tin plates	3,528	4,014	43,243	48,185
Hoop, band and scroll	31	34	1,347	324
Totals	51,700	13,186	544,934	141,522

PRICE OF STEEL AND FUTURE OF THE SOUTH.

Editor IRON TRADE REVIEW:

The writer's attention has been directed to your editorial in the Sept. 17th issue in reference to his article in the *Manufacturers' Record* of Sept. 2, regarding the steel situation in the south.

The writer must admit the truth of your remark that manufacturers naturally get all they can for their product. The United States Steel Corporation in the south to date has followed this tendency. It has in this respect simply kept up the policies of the predecessors. The Tennessee Coal, Iron & Railroad Co. asking the Pittsburg price on bars and plates plus freight to Birmingham.

Yet, no one who is posted on the question will deny that this policy has frightfully crippled southern manufacturing interests and has affected the interests of the entire southern people.

Recently the writer had a personal interview with a gentleman formerly in close touch with the sales department of the Tennessee Coal, Iron & Railroad Co. He stated as a fact that a great number of large manufacturing concerns have wished to build large factories in the south providing they could buy their steel bars and plates at a reasonable figure. These parties came to the Tennessee company asking some concession from the regular Pittsburg price with freight added. No concession was ever granted and the factories were built north of the Ohio. It is undoubtedly true that many factories are being built today in the north which should be located in the Birmingham district. The writer's concern is now planning to move out of the south into the north if no change of conditions is in prospect. We are

starving down here with food just under our feet.

But, nature's laws are never retarded long. The natural advantages of the south will eventually win. Ultimately the south will be the manufacturers' paradise. Public opinion, legal action, competition, or most likely a broad minded viewpoint of the Steel Corporation will finally adjust things.

As you suggest, there is some room left for independent steel mills. One or two corporations could take up steel making especially well. Today any concern agreeing to base steel at Birmingham at the same percentage of profit, or even the same base price, as at Pittsburg, could contract for the sale of 60 per cent of the steel used in the south for 10 years to come. The feeling down here against the excessive prices of steel is growing stronger each day. The Steel Corporation so far has had a strong excuse, that of newness in the south, but each day this excuse grows weaker.

Comparatively the south is using little steel today. She can not, of course, use much steel at such a great handicap in price. The north supplies steel to herself, supplies the west, supplies a great deal of the south and supplies the export trade. Give the south an even chance and see how much steel she can take care of. With the proper price of steel at Birmingham, new steel mills could with difficulty be built fast enough to keep up with the southern demand. The world would be in the south's field.

The writer believes in the good faith of the Steel Corporation. He believes in the ultimate great benefit to the south of the Steel Corporation's presence here. He does not believe that the Corporation will adopt permanently the policy referred to of getting as much as possible for her product. The Steel Corporation must appreciate the principle of political economy that it is best to make the most steel where it can be made the cheapest.

The Steel Corporation sells steel outside the United States. The market for machinery and steel articles is the entire world. The Steel Corporation must realize that it is for her betterment to make steel as cheap as possible to get more foreign business. If steel can be made $3 per ton cheaper in Birmingham than in Pittsburg (as pig iron is) the Steel Corporation will bend her energies to making steel in Birmingham the $3 per ton cheaper and also to make as many tons of it there as possible. And, the manufacturing market for this steel in the south will be had as fast as the price is fixed in proper comparison to the cost. Today the present southern manufacturers have the mechanical and financial capacity of using five times as much steel as they are getting from Birmingham.

Nor is this longer the day of great corporations doing entirely as they please. From now on the rights of the people will have to be respected. Great monopoly corporations will not be allowed to get as much for their goods as they can. No great corporations will be allowed to pool prices against an entire section of a country and thus oppress a whole people. The day for that sort of things is over. The people will not stand for it. The southern people are apt to be a little bit excitable anyway. The government no longer stands for these oppressive monopolies which control a big situation and use the power harmfully. To remedy unjust conditions it is merely necessary to prove that the conditions are unjust and then turn on the light.

The Steel Corporation has recently announced large new steel mills at Ensley. The writer will be much disappointed if there is not an announcement shortly that Birmingham will take the same steel basing as Pittsburg. On that day the Steel Corporation has made the south its friend.

HUGH W. SANFORD.

The Sanford-Day Iron Works,
Knoxville, Tenn., Sept. 24.

Depends on Election.—Samuel S. Eveland, president of the Standard Roller Bearing Co. of Philadelphia, has posted a notice that the reduction of 10 per cent made in wages of employes during the panic last winter will be restored in the event of Mr. Taft's election, the increase of 10 per cent referred to, to take effect immediately after the election. The company employs over 1,000 hands, and is very busy at present, running a portion of its factory all night and the remainder until 10 o'clock; but many orders which are now being filled are subject to cancellation, if Mr. Bryan is elected. Mr. Eveland has received letters from various sections of the country, from manufacturers and others, commending the position taken by this company.

Bessie furnace of the Bessie Ferro-Silicon Iron Co., Columbus, O., was forced to shut down Sept. 16 on account of the drouth, there being not enough water to run the furnace.

IRON BUYERS' ASSOCIATION.

The first annual convention of the Iron Buyers' Association was held at the Phillips House, Dayton, O., Sept. 30, with President G. H. Gorman in the chair. The meeting was attended by a goodly portion of the membership and business of considerable importance was transacted.

The following officers were elected for the ensuing year: President, G. H. Gorman, of Davis Sewing Machine Co., Dayton; vice presidents, Theo Bollman, of the Bollman-Wilson Foundry Co., Cincinnati; A. F. Sparks, of James Leffel & Co., Springfield; Geo. M. Verity, of the American Rolling Mill Co., Middletown; Felix Kahn, of the Estate Stove Co., Hamilton; J. W. Jeffrey, of the Ohio Malleable Iron Co., Columbus; secretary and treasurer, Wm. Gugenheim, of the Foos Mfg. Co., Springfield.

Between the morning and afternoon sessions, dinner was served in the banquet room of the Phillips house, and informal talks by the members made this feature of the convention both entertaining and profitable.

Will Enlarge Plant.—An announcement to Milwaukee city officials has been made by E. J. Buffington, Chicago, president of the Illinois Steel Co., that the Milwaukee (Bay View) plant of the company is to be enlarged. This information has been imparted as a result of the negotiations which have been carried on by Mayor Rose, of Milwaukee, and other city officials, with the officials of the Illinois Steel Co., in regard to the company turning over a portion of its land to Milwaukee for the location of a new turning basin. President Buffington believes that if the company should issue a quit claim deed to the land, the future enlargement of the Milwaukee plant would be seriously interfered with as the land in question will be required for the unloading of ore at the plant after the contemplated changes are made.

Moves General Offices.—The general offices of the Virginia Iron, Coal & Coke Co., including those of the vice president and general manager, secretary and treasurer, auditor, general counsel, purchasing agent, general sales agent and claims attorney, which are at present located at Bristol, Va., will be removed Oct. 12 to Roanoke, Va., and all communications intended for these departments should be addressed to that point.

Haselton stack No. 1, of the Republic Iron & Steel Co., blew in Sept. 2, and all Haselton, O., three stacks are now blowing.

IRON AND STEEL FEATURES

Were Prominent in the Industrial Parade at Pittsburg.

Representation of the vast importance of the iron and steel industry of Pittsburg formed a leading feature of the great industrial parade in that city Oct. 1, which was one of the crowning events of a week's celebration commemorating the city's sesquicentennial anniversary. Elaborate floats portraying various features typical of the whole industry were arranged by the manufacturers. A general float symbolized the iron and steel industry and its allied activities, showing the spirit of flame transforming the energy of the fire into the finished products of iron and steel.

The Riter-Conley Mfg. Co., steel construction, presented a reproduction of a modern blast furnace plant.

The John Eichleay Jr. Co., structural manufacturer, had two floats, one showing the modern method of moving buildings from place to place, and the other the evolution in building from the log hut to the modern steel sky scraper.

The A. Garrison Foundry Co. represented the development of the roll-making industry of Pittsburg, a reproduction in miniature of the old Pittsburg foundry where cannon balls were made for Commodore Perry on Lake Erie, and a small roll manufactured in 1825, contrasted with an immense roll manufactured in 1908, was shown.

The Jones & Laughlin Steel Co. portrayed the manufacture of steel by modern methods, showing the iron ore and a Bessemer converter.

The Pennsylvania Railroad system represented a characteristic scene along the Allegheny and Monongahela rivers. A steel plant was shown with its transportation facilities represented by a stern wheel steamboat and coal barges plying upon the river, and by a railroad yard with locomotives and cars bringing the raw material to the mill and carrying away the finished product for distribution throughout the country.

Chas. J. Graham, of the Graham Nut Co., acted as marshal of the manufacturers' division and among his aides were Taylor Alderdice, third vice president of the National Tube Co.; W. G. Clyde, assistant manager of sales of the Carnegie Steel Co.; John Eichleay Jr. and others. Col. H. P. Bope, vice president of the Carnegie Steel Co., was marshal of the fourth division of the parade, in which were uniformed, semi-military and fraternal organizations.

RETIRES FROM BUSINESS.

Fulton Iron Works of San Francisco Arranges to Liquidate.

(Special Correspondence.)

San Francisco, Oct. 2.—The Fulton Iron Works of this city is about to go out of existence, and is making arrangements to liquidate. It is one of the three largest structural iron, engineering and ship building plants on the Pacific coast, and has had an honorable career for the past 50 years. The company owns a tract of land of more than 20 acres with a frontage on the bay of 1,100 feet, on which the plant is located, admirably suited for ship building and terminal purposes. The concern is said to be solvent and to be able to pay its debts in full.

The reason for going out of business is ascribed to lack of profitable business, the investors desiring to draw their capital out of a concern which has not yielded any profit for a long time. That the concern has failed to find a purchaser is additional proof that the business is not desirable. This is a pointed commentary upon conditions existing in San Francisco, considering the amount of structural and ornamental iron which is used in this city at present.

STRUCTURAL CONTRACTS.

(Special Telegram.)

New York, Oct. 7.—American Bridge Co. September bookings were 15,000 tons, not including the Oliver building, but including 2,500 tons for two large bar mills at Gary. The McClintic-Marshall Construction Co. took 2,100 tons for plate girder work for the Northern Pacific. No decision has been reached on Iowa Central bridge, the Northwestern station or the Emigrant Savings Bank.

SOUTHERN IRON SOLD.

(Special Telegram).

Pittsburg, Sept. 7.—A large southern interest has sold a fair aggregate of first quarter iron at $14.00 for No. 1 soft, $13.50 for No. 2.

Forged rifle barrels, rough bored, were held dutiable at 25 per cent by the board of United States general appraisers in protests of J. G. Riga, Boston. The assessment was at 45 per cent and it is very likely that the government will appeal from the decision.

NOTEWORTHY SUCCESS

Of Allis-Chalmers Co. in New Lines—The Annual Report.

The annual report of the Allis-Chalmers Co., for the year ending June 30, 1908, shows a gain of $1,347,719 in net profits over the previous year. The net earnings increased $1,003,112.

The income account compared with the previous year as follows:

		Increase.
Net profits	$2,573,961	$1,347,719
Maintenance, renewals, etc.	778,477	*76,026
Depreciation, etc.	313,779	59,791
Int. on bonds, notes, etc.	805,891	300,842
Special res.	60,000	60,000
Total charges	$1,958,147	$ 344,607
Net earnings	615,814	1,003,112
Previous deficit	229,817	387,298
Profit and loss surplus	$ 385,997	$ 615,814

*Decrease.

President Whiteside explained that the reserve of $60,000 has been made to meet any possible shrinkage because of poor collections. Beginning with the second quarter of the fiscal year and running for six months, he says, the volume of sales fell to one-half of normal. He adds:

> Noteworthy success has been attained in the sale and operation of our new lines of production, namely, gas engines, steam turbines, hydraulic turbines and electrical apparatus, which are now among the standard products of our company, their development having been completed since the last report. The extended use of these lines of production, often in connection with our older products, not only by purchasers who have long been regular customers, but by numerous new customers in almost all classes of industry, forms the basis for an increasing and profitable business.

Among the features disclosed by the balance sheet as noteworthy are the material reductions in the inventory, amounting to $2,518,841 and the increase in notes and accounts receivable of $272,137; the increase in cash of $1,059,300 and the decrease in accounts and notes payable of $2,304,413. These changes, together with the net profit on operations for the year not used for adding to the plant have strengthened considerably the position of the company and increased its working capital. After disposing of the South Foundry property and certain vacant lots situated at the Reliance Works, the company availed itself of the opportunity to purchase with the proceeds thereof 131 of its outstanding bonds at an average price of 62.22 per cent, and the discount of $49,485 was applied to reducing the deferred asset shown on the balance sheet as "discount and commission on bonds."

Addison S. Pratt has been appointed receiver of the Salem Nail Co., manufacturing nails, tacks and spikes at 279 Pearl street, New York City. The business was founded in 1850. Until recently its president was John A. Wilbur. Liabilities are in the neighborhood of $90,000, and assets are small.

PROGRESS MADE BY PITTSBURG FOUNDRYMEN'S ASSOCIATION.

A year of substantial progress was noted in the annual reports of the officers presented before the meeting of the Pittsburg Foundrymen's Association held Oct. 5 at the Hotel Henry in that city. Secretary F. H. Zimmers reported the present membership to be 104, a gain of 30 over a year ago, and showed a neat balance on hand in the treasury. The association accordingly begins a new year under quite auspicious circumstances.

The adoption of the report of the nominating committee resulted in the election and inauguration into office of the following officers:

President—C. H. Gale, Pennsylvania Malleable Iron Co.

Vice President—Joseph T. Speer, Pittsburg Valve, Foundry & Construction Co.

Treasurer—John McLaren, Phillips & McLaren Co.

Secretary—F. H. Zimmers, Union Foundry & Machine Co.

Executive Committee—H. E. Field, Mackintosh, Hemphill & Co.; John A. Logan, Jones & Laughlin Steel Co.; E. D. Frohman, S. Obermayer Co.; B. D. Fuller, Westinghouse Electric & Mfg. Co.; W. A. Johnson, Jamison Coal & Coke Co.

The retiring president, H. E. Field, thanked the association for its operation during his term of office.

Upon the suggestion of Henry Spilker, of the Sterritt-Thomas Foundry Co., the association decided to investigate the advisability of having a permanent exhibit of foundry appliances established in Pittsburg. If the project is carried out, it is expected the display will be made in the buildings of the Pittsburg exposition. A committee composed of Mr. Spilker, E. D. Frohman and F. H. Zimmers was named to determine the advisability of the plan. The paper of the evening was presented by A. N. Spencer, technical engineer of the Harbison-Walker Refractories Co., on "Fire Brick for Cupolas."

Extensive Improvements. — The American Steel & Wire Co. is making extensive improvements to its Braddock, Pa., plant which will materially enlarge the capacity. A new rod mill is being installed and the wire mill is being rebuilt and enlarged. Two tandem compound steam engines of 3,000 horsepower respectively, have been put in, and these will drive the improved mills.

PERSONALS.

G. G. Thorpe, second vice president of the Illinois Steel Co., and first vice president of the Indiana Steel Co., returned from a trip to Europe of several weeks' duration, this week.

H. Hamkens, who has been for the last six years in charge of the Corliss engine and blowing engine department of the Mesta Machine Co., Pittsburg, has resigned his position and established himself as consulting engineer in Princeton, N. J.

Edward J. Fowler, president of the California Metal Trades Association, delivered the principal address at the exercises in celebration of the thirty-third anniversary of the founding of the James Lick School of Mechanical Arts. He spoke on the "Metallurgy of Steel."

Carl Graul, who has been chemist for the Semet-Solvay Co., at Dunbar, Pa., has been appointed superintendent of the new by-product coke plant erected at Charlotte, Ill., by the United States Steel Corporation.

S. R. Robinson, formerly sales agent for the Inland Steel Co., Chicago, resigned Oct. 3 to accept the position of Chicago representative for the Lackawanna Steel Co., under the title of district sales agent, with offices in the Commercial National Bank building, rooms 1726 and 1728.

Horace S. Wilkinson has been elected president of the Halcomb Steel Co. to succeed C. H. Halcomb, whose relations with the company were terminated on Sept. 28 at a meeting of the directors. Dr. John A. Mathews, for six years metallurgist and assistant manager of the Sanderson Bros. Steel Co., will continue in full charge of the manufacturing departments of the Halcomb company as operating manager and general superintendent.

OBITUARIES.

James Swan, manufacturer of mechanics' tools at Seymour, Conn., died recently, aged 77 years.

Walter Thompson, for a number of years foreman of the pattern shop of the Brooks Locomotive Works at Dunkirk, New York, died Oct. 3 of pneumonia. He was 43 years of age.

Walter E. Devlin, president of the Philadelphia Hardware & Malleable Iron Works, Ninth and Jefferson streets, Philadelphia, died in that city of appendicitis, Sept. 19. Mr. Devlin was 38 years old and the son of Thomas Devlin, of that city.

John J. Reardon, formerly president of the Central Foundry Co. and an old resident of Milwaukee, died Sept. 28 at his residence there, aged 58 years. About a month prior to his death, Mr. Reardon sold his interest in the Central Foundry Co. to Alexander Martin, vice president of the company. Mr. Reardon was born in Ireland, and came to Milwaukee with his parents when but a lad. Mr. Reardon is survived by four daughters and two sons.

John Wesley Nute, president of the St. Louis Car Wheel Co., died at Portland, Me., Oct. 5, aged 47 years. He began his business career with the car wheel company as a sales agent in 1892, and became secretary and general manager in 1897. He was also secretary and treasurer of the Decatur Car Wheel Mfg. Co., and was a member of the Engineering Society of Philadelphia.

DECREASED DEMAND.

(Continued from first page.)

being constructed at the yard, at an approximate cost of $450,000. Two similar boilers have already been installed and the additional ones will give the plant a capacity of 1,800 horsepower.

J. S. Schwartz, of New Zealand, who was in Seattle recently, gave out the following regarding the coal mines of his country: "The Westport-Stockton mines, which are now ready to export coal, are capable of furnishing immense quantities of high grade, smokeless bituminous coal containing only a trace of sulphur. The coal is suitable for manufacturing metallurgical coke."

Foundry conditions at Tacoma, Wash., are showing some improvement which, however, may be only a temporary spurt. One of the largest concerns in the city reports a fair business in municipal castings, including manhole rings, and also recently received an order for 70 tons of cast iron bases for the columns being installed in the new Harmon building. Another Tacoma firm, the Olympic Foundry & Machine Works, reports a reasonable business in cast iron columns for small buildings.

The Wescott Tracklaying Machine Co. is moving its machine shop from Puyallup, Wash., to the north end of the Eleventh street bridge in Tacoma. The new shop will manufacture the Wescott tracklaying machine and do general jobbing. Some additional machine tools will probably be installed in the future.

The next regular quarterly meeting of the California Metal Trades Association will be held in San Francisco Oct. 14. Several interesting papers are being prepared for the occasion and it is planned to make the meeting a "Prosperity Convention."

AMONG MACHINERY MAKERS.

CINCINNATI

Manufacturers Will Go to South America—Business Prospects Improve.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., Oct. 6.

The month of October begins with a hopeful feeling in the machine tool trade, and there are evidences of continued slow but gradual gain and progress toward restoration of normal conditions. Some fair-sized orders have been received during the week and the Chicago, Milwaukee & St. Paul railway has submitted a good list, which is being figured upon by Cincinnati manufacturers. There is considerable replacing of old-type tools by new tools in the shops and a number of the manufacturers are at work upon improvements upon their machines. Engine builders have several large propositions under consideration. In discussing the trend of business, the political situation is almost invariably introduced and by many is regarded as the dominant feature affecting the apparent indecision in regard to purchases of machinery and equipment.

When it is considered that there has been undoubted improvement in the business in the past three months in spite of the unsettled conditions prevailing, the outlook may reasonably be regarded with more assurance regardless of election results, as purchasing has been so long deferred that needs must of necessity be pressing and the feeling is growing that a decided improvement and demand for prompt deliveries are likely to come in the near future.

Cincinnati manufacturers and exporters are much interested in a proposition which is to be carried out under the auspices of the Manufacturers' Club. The proposition contemplates a trip by special steamer to South America of a delegation of about 100 Cincinnati business men and it is intended to use the steamer to exhibit the manufactures and to demonstrate their usefulness and efficiency. E. H. Hargrave, of the Cincinnati Tool Co., is chairman of the committee in charge of the expedition and on the same committee Murray Shipley, of the Lodge & Shipley Machine Tool Co., is an active colleague. Mr. Hargrave stated that it is expected that the machine tool interests in Cincinnati will take advantage of this opportunity. The trip contemplates visits to Brazil, Argentine, Chili, Uruguay, Peru and the Panama district. Frank B. Wiborg, a member of the committee, is now in New York negotiating for chartering a suitable steamship for the enterprise.

The administrative council of the National Metal Trades Association will hold a meeting at the Sinton Hotel, in Cincinnati, on Oct. 26 and 27. This committee consists of F. K. Copeland, of the Sullivan Machinery Co., Chicago; H. P. Eells, of the Bucyrus Co., of Cleveland; J. H. Schwacke, of William Sellers Co., Philadelphia; William Lodge, of the Lodge & Shipley Machine Tool Co., Cincinnati; J. R. Back, of the F. E. Reed Co., Worcester, Mass.; P. B. Kendig, of the Seneca Falls Mfg. Co., of Seneca Falls, N. Y.; C. Bermingham, of the Canadian Locomotive Co., Kingston, Ont.; M. K. Bowman, of the Griscom-Spencer Co., of New York City; H. W. Hoyt, of the Great Lakes Engineering Works, Detroit; E. P. Robinson, of the Atlantic Works, East Boston; W. A. Layman, of the Wagner Electric Mfg. Co., St. Louis; George Mesta, of the Mesta Machine Co., Pittsburg; and M. H. Barker, of the American Tool & Machine Tool Co., Boston. It is expected that the entire committee will attend the meeting.

The American Tool Works Co. has completed the exterior and interior improvements in its plant and is now replacing all of its old-type machines with new and improved types. Nine new lathes and two planers have been installed during the past week.

The month of October opens satisfactorily with the Lodge & Shipley Machine Tool Co., which booked a $6,000 order on the second of the month. The company reports steady improvement in business in the past three months.

The I. & E. Greenwald Co. reports the gear cutting department exceedingly busy and finds it difficult to keep up with orders. The foundry business of the concern is increasing gradually and several large installations, including the entire equipment for a large manufacturing plant, is under negotiation.

The stock of the Machinery Sales Co., consisting of new and second-hand metal-working, wood-working, electrical and tin-working machinery, is advertised under receiver's sale, to be disposed of at auction.

NEW YORK.

October Starting With Prospects of Improved Business.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., Oct. 6.

Despite the spirit of hesitancy incident to the national campaign, the machine tool trade is beginning to show increased activity and October is starting with prospects for one of the best months since the beginning of the depression. Bookings for September averaged well with the leading houses, one of which reports that inquiries for small lists, say for half a dozen machines, are taking the place of the inquiries for single machines which made up practically all the summer's business. As yet, few orders are developing from railroads or from equipment concerns catering to their interests, but the vigorous prosperity campaign to be launched by the association of equipment companies formed at New York last week is expected to aid materially in fostering a more equitable public sentiment toward the railroads and indirectly in making possible their re-entrance into the purchasing field. Although taken at very low prices, orders for cars are on the increase and builders' shops are in better shape than for several months.

One of the most important machinery lists which is expected in the trade at an early date is that of the Savage Arms Co., Utica, New York, which is to make extensive purchases for additional equipment to its shops at that place. Lathes, millers, grinders and other tools will be required and it is expected that the expenditure will be in the neighborhood of $25,000.

Considerable equipment in electrical lines is being purchased at this time by the Public Service Corporation of New Jersey for replacement purposes at its various plants. J. T. Whittlesey is chief engineer, with offices in the Prudential building, Newark, N. J.

For the fall meeting of the National Machine Tool Builders' Association, which will be held at the Hotel Imperial, New York City, Oct. 20 and 21, an interesting program is being arranged. President Fred L. Eberhardt, of Gould & Eberhardt, Newark, N. J., announces that Capt. Carden, who has just completed an exhaustive study into European machinery markets under the direction of the department of commerce and labor, will address the association. Another speaker will be Harrington Emerson, of the Emerson Co., standardizing engineer at 30 Church street, New York

City, who has recently contributed several important articles to THE IRON TRADE REVIEW. Several of the convention committee reports will be of timely interest and indications are that the meeting will be well attended.

The Columbus & Hocking Clay Construction Co., which is a branch of the Columbus & Hocking Coal & Iron Co. with a plant at Kachelmacher, O., recently installed a 1,500-horsepower producer gas plant and employed as gas engineers Harvey & Hill, 50 Church street, New York City. Under their direction one 500-horsepower unit has been placed in operation and arrangements are being made for putting the other two units in working condition.

C. W. Leavitt & Co., 220 Broadway, New York City, report that the improvement in the steel trade is noticeable in the increased inquiry for ferrosilicon, ferro-chrome, ferro-tungsten and other alloys which they handle. They also report negotiations on with several important steel interests for the introduction of the Girod electric steel-making furnace, the American selling rights of which they recently secured.

The Ridgway Dynamo & Engine Co., Ridgway, Pa., has received an order from the Gould Storage Battery Co., for a special 3-machine exciter set for installation in connection with storage battery equipment for the Pennsylvania lines west at Ashtabula Harbor, O. The order was placed through the Ridgway company's New York agent, the Spooner-Mathewson Co., 140 Cedar street.

Hill, Clarke & Co., through their New York office, 140 Cedar street, have shipped to the Remington Typewriter Co., Ilion, N. Y., five Henry & Wright drill presses, each of six spindles. A number of drill presses of the same make were installed some time ago.

Frederick C. Guerrlich, formerly connected with the Yale & Towne Mfg. Co., has opened an office at 19 Liberty street, New York City, where he will conduct a machinery and supply trade, making a specialty of hoisting appliances.

Announcement is made that Eberhardt Bros. Machine Co., 66 Union street, Newark, N. J., has changed its corporate name to Newark Gear Cutting Machine Co. This change is made to more properly identify the product of the company, which makes the design and manufacture of gear cutting machines its exclusive specialty. During the past year its equipment has been augmented by a number of machine tools and the facilities of its gear cutting department have been increased. The personnel of the company remains unchanged.

MILWAUKEE

Manufacturers Do Not Expect Early Increase of Business.

Milwaukee, Wis., Oct. 5.—Milwaukee machinery manufacturers do not expect business to be materially increased now until after the fall elections. General improvement which has already taken place in the manufacturing field has been most satisfactory and while few plants are being operated at full capacity, manufacturers say that this stage will be reached soon after election. Orders which are being placed are fairly large, but show that producers and industries in general are somewhat inclined to proceed carefully for a few weeks.

Plenty of activity is to be found at the West Milwaukee shops of the Chicago, Milwaukee & St. Paul railway. Work has been pushed on the equipment for the new Pacific extension of the road and for the past few weeks a complete new train has been sent out of Milwaukee daily for the west never to return. Upon an average of 24 stock and freight cars are turned out daily at the plant and added facilities have made it possible to complete two locomotives each week. Four type K1 locomotives are sent to Milwaukee by the American works each week, thus making possible the record of sending out a complete train each day.

A special high school course preparatory to entering the Milwaukee School of Trades will be made a part of the Milwaukee high school curriculum, probably this year.

The University of Wisconsin has begun its fifty-eighth year with an enrollment of 4,100, an increase of 100 over the attendance of last year. Much of the increase has taken place in the school of engineering. Prof. Carl C. Thomas, formerly at the head of the department of marine engineering at Cornell University, has been made professor of steam engineering to take the place of the late Prof. Storm Bull. Prof. Edward C. Holden, of White Plains, N. Y., has been appointed to the professorship in mining engineering.

CHICAGO.

Western Machinery Trade Shows Little, if Any, Improvement.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Oct. 6.

The tenor of the western machinery trade is but little changed during the week and to report that the situation is still much too quiet to be at all satisfactory covers nearly everything that might be said.

The Western Rail Supply Co., 1871 West Thirty-fifth street, Chicago, with an indebtedness of about $4,000, has found it necessary to ask for a trusteeship. The machinery and other available assets are to be sold. M. C. Rasmussen, 21 LaSalle street, is trustee.

Wm. B. Klein, 507 Larchmont avenue, Chicago, is in the market for one universal boring mill with a 3-foot swing, one radial drill, 3-foot swing, one universal miller No. 2, one 16-inch quick change engine lathe, one 16-inch back gear crank shaper.

J. A. Davis, 309 Chamber of Commerce building, is in the market for a 60-horsepower fire box boiler designed for a steam pressure of 125 pounds.

The William Fetzer Co., of Springfield, Ill., was incorporated with a capital of $100.000 to manufacture and sell agricultural implements and accessories. The incorporators are William Fetzer, J. F. Miller and James A. Easley.

The Watkins Machine & Foundry Co., Hattiesburg, Miss., is enlarging its shops and will require new equipment for its repair shop and mill supply department.

The Marshall Car Wheel & Foundry Co., Marshall, Texas, has awarded the contract for a 30 x 70-foot brick and iron addition to its plant.

The Powell Land & Lumber Co., Rusk, Texas, is asking for prices on two 50-horsepower boilers, the price to include the stack and breeching. Figures are also wanted on a 14 x 16-inch or 14 x 18-inch side crank engine.

Oliver Carter, 2104 First avenue, Birmingham, Ala., is in the market for a 24-inch drill press and a 14-inch or 16-inch bed lathe.

The Ostermann Mfg. Co., 120th and Peoria streets, Chicago, will build a one-story storage building, 40 x 120 feet, on South Morgan street. This company, which is in the car repairing business, has enlarged its facilities materially in the last few months.

The Heine Safety Boiler Co. will rebuild its plant at St. Louis and has already let the contracts for the new buildings. The new main building will be 140 x 400 feet; flange shop, 60 x 180 feet, and power house 75 x 80 feet.

The Ashland, Wis., charcoal furnace of the Ashland Iron & Steel Co. will blow in about Oct. 15.

RAILWAY BUSINESS ASSOCIATION FORMED

By Supply and Equipment Makers—Will Arouse Employes.

The Railway Business Association, an organization "for the general purpose of conserving the interests of the railways of our country, and the interests also of the members of this association which are intimately associated with those of the railways," was formed Sept. 30, when about 75 representatives of the leading railway supply and equipment concerns met at the Waldorf-Astoria, New York City. Some idea of the lines along which the association's efforts will be extended may be gained from the following excerpt from the call of the organization committee, outlining its more important purposes:

First.—To advocate, and in all honorable ways to endeavor to secure fair play to railways in matters of federal and state legislation; also to favor such adjustment of transportation rates as will be equitable and adequately remunerative to the railways.

Second.—To arouse among all those who make their living by serving railways and the manufacturing interests allied herewith, a sense of active loyalty to their common interests, which shall manifest itself in defense thereof when subjected to unjust attack.

This call was sent out by the presidents of four equipment concerns: Otis H. Cutler, of the American Brake Shoe & Fdy. Co.; Chas. A. Moore, of Manning, Maxwell & Moore, Inc.; J. S. Coffin, of the Franklin Railway Supply Co.; and George A. Post, of the Standard Coupler Co. Considerably more than one hundred concerns gave their hearty co-operation to the plan. The organization meeting was presided over by Col. Post, whose remarkable address presented a convincing argument for the necessity of such an organization. In part, his remarks are given below:

Harsh Hostility.

When railroads are prosperous, times are good everywhere; when railroads are not prosperous, jobless hordes are in despair, and the cupboards of workingmen are bare. Largely responsible for this paralysis afflicting our railroads is the attitude of harsh hostility toward them, as manifested in federal and state administrative and legislative circles. Because of this hostility, confidence of investors in their prospective profitable operations, and in the stability of values of their securities has been seriously undermined.

The railroads of America are just now the victims of a powerful and vindictive wrath trust. It has been a great, fat feast for predatory wrath makers. No trust that was ever organized in this country has it in its power to create the thousandth part of the havoc, rob so many people of employment, strike terror to the hearts of investors and diminish the incomes of widows and orphans as has this same juggernaut of agitation—the wrath trust.

Its vengeful progress must be checked. The hour has struck when courageous men must form a wall of human adamant and resist it. If ever again good times shall return to bless us; if ever again we may boast of American prosperity; if ever again confidence shall be restored in business circles, there must be an end to this frenzied fulmination against railroads, and calm reason must bear sway in the solution of the intricate problems that confront us. Scowls and clenched fists fetter reason. Smiles and the friendly handshake set it free.

It is true beyond a doubt that there have been in the past and are at present many things in the conduct of our railroads that were not and are not right, and against which protest has been and may be rightly made. To deny this would be silly, and would render abortive at their inception any efforts that we might make in behalf of railroads. If we would be influential in our friendship for the railroads, our attitude must not be that of condonation of any wrong, but staunch advocacy of fair play all round.

Duty to the Public.

Col. H. G. Prout, vice president and general manager of the Union Switch & Signal Co., Swissvale, Pa., followed with an instructive address, in the course of which he made the emphatic assertion that "the railroads of the United States, as they stand today, are under-capitalized rather than over-capitalized." In regard to the occasion for the outburst of "predatory wrath" against the railroads, he said:

I have long held that the railroad officers almost without an exception are delinquent in their duty to their companies and to the nation in their indifference to public opinion and in their neglect of their opportunities to create a correct public opinion. A few railroad men have taken pains to inform the public as to the facts, but considering their opportunities, their knowledge and their ability, the railroad men have been singularly ineffective in directing the political and social opinions of their fellow citizens.

Chas. A Moore, president of Manning, Maxwell & Moore, Inc., New York City, made a brief address to emphasize the fact that the purpose of the meeting and of the proposed association was entirely nonpartisan. A random discussion of methods followed, and the meeting adjourned until evening to await the recommendations of an organization committee composed of the following: H. G. Prout, vice president and general manager Union Switch & Signal Co.; O. H. Cutler, president American Brake Shoe & Foundry Co.; J. S. Coffin, president Franklin Railway Supply Co.; D. C. Noble, president Pittsburg Spring & Steel Co.; N. Paul Fenner, president American Valve & Meter Co.; E. S. Keith, president Keith Car & Mfg. Co.; H. H. Westinghouse, vice president Westinghouse Air Brake Co.; W. H. Woodin, vice president American Car & Foundry Co.; O. P. Letchworth, president Pratt & Letchworth Co.; E. B. Leigh, president Chicago Railway Equipment Co.; A. H. Mulliken, president Pettibone-Mulliken Co.; Charles A. Moore, president Manning, Maxwell & Moore; W. H. Marshall, president American Locomotive Co.; W. G. Pearce, vice president Griffin Wheel Co.; J. H. Schwacke, vice president Wm. Sellers & Co., Philadelphia.

On the recommendation of this committee, a form of permanent organization was adopted at the evening session, and officers were elected as follows:

President, George A. Post, president Standard Coupler Co.

Vice presidents: H. H. Westinghouse, Westinghouse Air Brake Co.; O. H. Cutler, American Brake Shoe & Fdy. Co.; W. H. Marshall, American Locomotive Co.; E. S. Keith, Keith Car & Mfg. Co.; A. H. Mulliken, Pettibone-Mulliken Co.; O. P. Letchworth, Pratt & Letchworth Co.

Treasurer, Chas A. Moore, Manning, Maxwell & More, Inc.

Executive Committee: W. G. Pearce, Griffin Wheel Co.; W. V. Kelley. American Steel Foundries; H. G. Prout, Union Switch & Signal Co.; J. S. Coffin. Franklin Railway Supply Co.; N. Paul Fenner, Jr., American Valve & Meter Co.; E. L. Adreon, American Brake Co.; J. H. Schwacke, Wm. Sellers Co.; A. M. Kittredge, Barney & Smith Car Co.; J. F. Dickson. Dickson Car Wheel Co.

Early announcement will be made of the selection for secretary of the organization and the location of its general offices.

British Plate Products.—Some remarkable products of British plate mills have been on exhibition at the Franco-British exposition, Shepherd's Bush, London. John Spencer & Sons, Ltd., Newcastle-upon-Tyne, showed a circular plate 1 inch thick and 13 feet 4 inches in diameter, its weight being about 5,500 pounds. Another plate rolled by the same concern, rectangular in shape, was 39 feet long, 12 feet 10 inches wide, and 1 inch thick, and weighed about 9½ tons. David Colville & Sons, Ltd., Motherwell, near Glasgow, showed three huge plates, as follows: 69 feet long, 87 inches wide and 1 inch thick; 45 feet long, 64 inches wide, No. 10 gage; 40 feet long, 60 inches wide, No. 12 gage. The larger Spencer plate mentioned, 154 inches wide, was sheared to that width.

AMERICAN INSTITUTE OF MINING ENGINEERS

Meeting at Chattanooga—Much Time Devoted to Discussion of the Gayley Process—Visits to Historic Places of Interest

The ninety-fifth meeting of the American Institute of Mining Engineers was held in Chattanooga, Oct. 1-6, the headquarters of the meeting being at the Hotel Patten, where the business sessions and the reading of papers took place. This meeting was originally announced to have been held in Birmingham, Ala., but labor troubles in the coal fields of that section made it necessary that a change be made in the original program, and Chattanooga was selected as being the most desirable substitute for a southern meeting place. This change was doubtless the cause of a smaller attendance than is usual; as a number of the members had signified their desire to make good the opportunity to visit the Birmingham district in order to see the great strides in metallurgical and mining development in that section. However, a great deal of enthusiasm was manifested at the meeting, and the citizens of Chattanooga headed by Capt. H. S. Chamberlain, president of the Roane Iron Co. and the Citico Furnace Co., had many trips to nearby local points of interest for the visitors. Chattanooga, the southern gateway of the Alleghenies, with its magnificent scenery, its historic associations of Lookout Mountain, Missionary Ridge and Chickamauga, and its nearby ore and coal mines, and many manufacturing plants, is a place of great interest to the visitor.

The Opening Session.

The first session was held Thursday evening, Oct. 1. Dr. R. W. Raymond, secretary of the Institute, introduced Capt. Chamberlain, who spoke of the pleasant memories of former meetings of the Institute held in Chattanooga and extended a welcome on behalf of the city to the visitors. Dr. John Hays Hammond, president of the Institute, then delivered his address on "Professional Ethics."

This was followed by a very interesting paper on the treatment of gold ores of Hog Mountain, Ala., by T. H. Aldrich of Birmingham. Mr. Aldrich described the preliminary work done in extracting gold from ores in Alabama, and showed the gold industry to be an important factor in the development of that state.

The session Friday morning was opened by a paper from Edward B. Cook, manager of the Warwick Iron & Steel Co., of Pottstown, Pa., telling what the experience of the above company has been with the Gayley dry blast. The paper will be found elsewhere in this issue.

In the discussion which followed the presentation of this paper, Edgar S. Cook, president of the Warwick Iron & Steel Co. stated that Mr. Gayley did not give his company a free license to put in the plant as was thought by some parties, but it had paid a license and considered it a most important addition to the plant. Mr. Cook did not wish to be quoted as urging others to adopt the plan, but felt that results would justify it. He stated that as far back as '88 he had been taking notes as to the amount of moisture in the air, and that he and John Birkinbine had tried to devise a means of drying the air by chemical processes, but the plan was not practical. Mr. Cook stated that when he investigated he found that when the moisture was four grains per cubic foot, it equalled 150 pounds of water per ton of iron, and when it was eight grains it was double this amount, and showed the serious effect of the water getting into the hearth. Mr. Cook went on to say that he thought that Gayley had accomplished in a practical way what had been thought of for a hundred years, and that he himself had the whole responsibility in the installation. In commenting on his son's paper, Mr. Cook thought that if their furnace had been in blast for six months longer, the results would have been better and that he thought that the investment had not been in vain. In answer to a question Edgar S. Cook stated that he effected a great saving in the winter by a regularity of working and that in ordinarily starting in the bad weather which occurs in the winter, a furnace does not work well due to the long irregularities in the weather.

Some Interesting Discussions.

J. E. Johnson, Jr., general manager of the Princess Furnace Co. of Glen Wilton, Va., was asked to discuss the paper and said:

"I am glad to have Mr. Cook's evidence that there was a decided difference between summer and winter conditions, and therefore the value of the dry blast was much greater in summer than in winter. Mr. Gayley and his engineer, Mr. Meissner, had both denied this, Mr. Meissner having published a paper before the Institute for the purpose of attacking a previous paper of mine on the subject in which this view was strongly advanced. I believe in the dry blast and am an advocate of it, and think it a good enough thing to stand on its own merits, and it ought not to suffer by extravagant claims of its friends. I believe that it will be a more successful process commercially in the future than any of the installations so far made for the reason that improved processes of refrigeration will be introduced which will reduce the cost of installation and of operation. In answer to a question by Mr. Parker of the United States Geological Survey, I further explain that variations in the excessive moisture of the stock had no direct deleterious influence on the action of the furnace, but that the resulting excessive moisture in the gas reduces its thermal efficiency and the blast temperature to a considerable extent, so that the furnace will run off after being charged with wet stock through this indirect action. This made it impossible in winter to obtain high blast heats when they were most needed, whereas, in the summer when they were needed, they were easily obtained. This went far to explain the fact that in Pittsburg they do not find much variation in winter and summer. The apparatus now is extremely expensive because it does all the refrigerating in one stage without regeneration and uses the brine system which requires at least double as much pipe, and the maintenance of at least 15 per cent minimum lower temperature than direct expansion. The removal of heat from low temperatures is precisely similar to pumping water from a shaft, except with the shaft the power required increases directly as the height through which it is lifted, whereas with the heat the power required increases at a much more rapid rate than the temperature through which it is raised. If one had a shaft 100 feet deep which made 1,000 gallons of water per minute of which three-fourths came into the top 20 feet, it would be absurd if he would allow it to fall to the bottom and pump from there instead of catching that which came through the top 20 feet and pumping that through a low head. It should be noted that the loss of power and increased plant are much greater in the cost of refrigeration than in the pumping plant."

John B. Miles of the Frank C. Roberts Co., of Philadelphia, stated that he thought that the cost of installing plants would be reduced, and that his company was then working on plans in changing the designs now in use.

Dr. Raymond's Remarks.

Dr. Raymond then made a few remarks on Gayley's invention and told of his experience going to London and seeing about extending patents in England on Mr. Gayley's invention. Dr. Raymond asked the question whether Mr. Gayley had invented anything as it has been shown that the idea of cooling the air was thought of many years ago. In answer to his own question, Dr. Raymond stated that Mr. Gayley's idea was refrigeration and not of cooling the air, and that Gayley's problem was to take moisture out of what might be called a hurricane. That ordinarily the blast through the tuyeres passes at the rate of 25,000 cubic feet a minute, and the refrigerating of this rapidly moving air was different from that in a still room such as was in a refrigerating plant. Dr. Raymond also stated that Mr. Gayley proposed to take moisture out of the air, not by cooling it but by lowering it to zero or lower which no one had ever done before, as he could not get frost to precipitate until it was that temperature. The paper on the Gayley dry blast at the works of the Illinois Steel Co. by Theo. W. Robinson was postponed on account of Mr. Robinson's inability to attend the meeting.

John B. Miles, of Philadelphia, then presented a paper on the relation of slow driving to fuel economy in iron blast furnace practice, but unfortunately the meeting had to adjourn before discussion of this very interesting paper could be brought about, as there were a number present who undoubtedly could have given interesting experiences on the subject.

Friday morning the members of the Institute were conveyed in automobiles to the historic Chickamauga battlefield, and while there were addressed by Gen. H. Clay Evans, ex-commissioner of pensions of the United States, who gave an excellent description of the battlefield. The visitors were entertained at Fort Oglethorpe by the officers of the Twelfth Cavalry, stationed there, after which a review was held on the excellent field which made an impressive sight to those present.

The business sessions were resumed Friday evening. A paper by Frank Firmstone, of Easton, Pa., was read by title, "An Unusual Blast Furnace Product." Ernest F. Buchard, of the U. S. Geological Survey, Washington, presented a valuable paper on Clinton iron ore in Alabama, which would have been of more interest to the members had the meeting been held in Birmingham where an inspection could have been made of the ores of Red Mountain. Chas. Butts, of Washington, reviewed the geology of Alabama coal measures. The session on Saturday included a paper on Clinton iron ore of Stone Valley, Huntington county, Pa. Another paper on the theory of the genesis of brown hematite ores was by H. M. Chance, of Philadelphia, Pa. This was very interesting on account of the fact that a great deal of the ore in the south is of this formation.

A paper on the investigation of jigging, by Royal P. Jarvis, of Knoxville, while very technical and intended to cover results obtained in the rarer metals, is of interest because of the developments now of the use of jigs in brown ore treating.

A number of papers were presented by title for subsequent discussion.

Government Plant Inspected.

Saturday afternoon the Institute was conveyed by special train to Hales Bar on the Tennessee river, where a lock and dam power plant is now under construction for the Tennessee River Power & Light Co., under government supervision. This work has now progressed about two and a half years, and there is probably 18 more months' work to be done. About $3.000,000 is to be spent on this gigantic undertaking. Maj. W. W. Harts, of the United States Corps of Engineers, having charge of the superintending of the above work, gave an interesting account of what is being done, showing the plans of the work, and escorted the party over the course of construction.

Saturday evening the "Chattanoogians" club gave a banquet to the visiting members and appropriate remarks were made by several prominent members.

On Monday, Oct. 5, a trip was taken by special train to Rockwood, Tenn., where an inspection was made of the mines and furnaces of which Capt. H. S. Chamberlain is president. There are two furnaces at this point, both of which are now in blast, making about 160 tons of iron a day. They are 16 by 80 feet, skip-filled, with eight Hugh Kennedy stoves, mixture of three-fourths hard and one-fourth soft red fossil ore. The ore is mined on the property of the company.

Late Tuesday night, the Institute left by special train for Copper Hill, Tenn., for a visit to the mines and smelters of the Tennessee Copper Co., at Ducktown, and the plant of the Ducktown Sulphur & Copper Co. A number of the members of the Institute took advantage of the proximity of Birmingham to make an informal visit, and an inspection of the mines and furnaces at that place.

The following is a list of those present who registered:

Those in Attendance:

H. S. Chamberlain, Chattanooga.
Jos. Struthers, New York.
Frank H. Crockard, Birmingham.
Erskine Ramsey, Birmingham.
Richard Peters Jr., Birmingham.
Robert S. Perry, Philadelphia.
Chas. Bailey, Pittsburg.
H. H. Stock, Scranton.
E. E. Ellis, Birmingham.
W. B. Shopshire, Durham, Ga.
Jos. O. Gilchrist, Denver.
D. H. Newland, Albany.
W. L. Saunders, New York.
Jno. H. Bartlett, New Market, Tenn.
Williard Warner, Chattanooga.
E. R. Jones, Las Experanzas, Mexico.
Milton Moss, Huntsville, Ala.
L. Holbrook and wife, New York.
Stuart M. Buck, Branwell, W. Va.
P. A. Maignen, Philadelphia.
Edward W. Parker, Washington.
Jno. M. Sherrerd, Easton, Pa.
Edgar S. Cook, Pottstown, Pa.
J. H. Deveroux, New York.
A. E. Vaughn, New York.
H. M. LaFollette, LaFollette, Tenn.
Edward B. Cook, Pottstown, Pa.
Robt. G. Martin Jr., Pittsburg.
Jno. B. Miles, Philadelphia.
L. C. Crews, Dayton, Tenn.
J. Lodge, South Pittsburg, Tenn.
H. M. Garvin, Rock Run, Ala.
Dr. and Mrs. R. W. Raymond, New York.
C. Willard Hayes, Washington.
Jno. Hays Hammond, Gloucester, Mass.
Valdemar Lindgern, Washington.
J. Gristy, University, Pa.
J. J. Rutledge, Baltimore.
Wm. Kelly and wife, Vulcan, Mich.
H. Foster Bain, Urbana, Ill.
E. I. Burchard, Washington.
S. W. McCallie, Aelmeta, Ga.
Wm. M. Brown, Ashville, N. C.
C. H. Gordon, Knoxville.
Royal P Jarvis, Knoxville.
B. F. Fackenthal Jr., Riegelsville, Pa.
Mrs. B. F. Fackenthal Jr., Riegelsville, Pa.
Mr. and Mrs Edwin S Hutchinson, Newton, Pa.
Chas. Kirchoff, New York.
R. H. Edmonds, New York.
I. E. Johnson Jr., Glen Wilton, Va.
R. I. Cornell, New York.

Utah's Iron Ore.—An investigation of the available iron ore beds in Utah has just been completed by Prof. C. K. Leith, of the University of Wisconsin for the government geological survey. The results have been recently published in a special bulletin by the survey. The region has been explored by means of 1,600 pits which show that the available ore area includes about 40,000,000 tons. Transportation facilities at this time are poor but at least one project is already in the development stage among Salt Lake City business men contemplating the building of a railroad into the ore region.

The contract for the construction of the new government dock to be built at the Ontario Iron & Steel Co.'s plant, just south of Welland, Ont., has been awarded to Joseph Battle, of Thorold, Ont. The work of construction has been begun. The estimated cost will be about $50,000.

THE GAYLEY DRY AIR BLAST AT THE WARWICK BLAST FURNACES, POTTSTOWN, PA.[1]

By Edward B. Cook

The installation of the Gayley dry air process appealed specially to the management of the Warwick Iron & Steel Co., for the reason that for 15 years records had been kept at the works of the company, showing the amount of water entering the furnace in the form of aqueous vapor, and careful observations had been made of its effect upon the working of the furnace. Some years had proved much worse in their effect than others, on account not only of excessive moisture, but also of great variation in the moisture from day to day, and sometimes within a few hours. It had been found impossible to make a satisfactory percentage of high silicon foundry iron in summer, even on high fuel, and for some years the endeavor had been made so to arrange the sales that during July and August only a small percentage of the iron produced would be required to carry more than 2 per cent silicon. Our larger furnace, running on basic iron, year after year, produced in February a tonnage 20 per cent higher than in August, on a much lower fuel consumption, while, at the same time, the summer months were marked by "messes," tuyeres closed by slips, and other irregularities, constituting serious additional business losses.

Details of the Warwick Installation.

In the spring of 1906 it was decided to install a plant of sufficient capacity to treat 70,000 cubic feet of air per minute, an amount much larger than that treated at the Isabella plant, and sufficient for the maximum requirements of our No. 1 and No. 2 furnaces. The form in which Mr. Gayley's invention was applied at our works may be outlined as follows: Ammonia, liquefied by pressure, is allowed to expand in pipes inclosing smaller pipes which carry brine; and this brine, thus cooled to a point 0 degree C., is conducted through a refrigerating chamber in coils of pipe, over which the air of the blast for the furnace passes, and upon which it deposits its moisture before entering the blowing engine.

The refrigerating part of our plant, which was furnished by the York Mfg. Co. of York, Pa., comprises five vertical single acting compressors, each employing about 220 horsepower and having 175 tons refrigerating capacity.[2] The object in having so many units is to guard against serious results from breakdowns, and also to have a more adaptable apparatus. Only in the summer months is the total capacity required. In winter one compressor will do the work for one furnace. An atmospheric condenser was installed above each compressor.

The brine coolers are of the double pipe class, with 3-inch outer pipes, in which the ammonia expands, and 2-inch inner pipes, through which the brine passes in the opposite direction. Through these coolers, and thence through the coils in the refrigerating chamber, the brine is forced by one of two fly wheel pumps. The cold brine enters the coils at the top.

The refrigerating chamber contains 57 miles of 1¼-inch wrought iron pipe, divided into seven sections by partition walls and doors, so that one section can be washed free from frost without affecting the other sections or increasing the moisture in the treated air. A large Sturtevant fan was installed to furnish air to the refrigerating chamber, and maintain therein a pressure of about 1 ounce per square foot, in order to insure a proper distribution of the air rising through the coils, and also to overcome the friction in the pipes to the blowing engines, so that there should be no doubt as to the proper filling of the blowing tubs. It also guards against the entry of untreated air through possible leaks in the pipes. We have found, however, that the plant can be run for a short time without this fan.

Upon the assumption that 4.5 tons of air are required to make one ton of iron, the production of 720 tons of iron a day calls for the treatment every hour of 135 tons of air, moving at a rapid rate, and varying both in temperature and in contained moisture. We had our share of troubles at the beginning, but for several months past none has been experienced, and the dry air plant is earning the reputation of being the only "sure thing" about the furnace.

Dry Blast on No. 2 Furnace.

Our first application of the dry blast was made on our No. 2 furnace, which was 100 feet high by 22 feet bosh and 15 feet crucible and stock line. This furnace had been in blast for nearly three years and had made more than 500,000 tons of pig iron. Down to June, 1907, with the exception of the three summer months of each year, the fuel consumption had been kept low and the iron satisfactory. But for almost a year before that date we had had high pressures and irregular settling of stock; and this we had attributed to poor distribution, due to the loss of the stock line, which we had found in very bad shape when we had a chance to see it while changing our bell in October, 1906.

On Aug. 8, 1907, two compressors being ready, the dry blast was applied. That day the moisture per cubic foot of air in the dry blast was reduced from 7 grains to 5, the next day to 4 and the third day to 3. The first effect was to brighten the tuyeres, so that they shone like stars. The slag increased greatly in temperature, and smoked so that one could not stay in the cast house while it was running. The iron ran so hot that even gray iron "sparked" all the way down the runner. The driving of the furnace increased, and the engines had to be slacked every day in the attempt to keep the rate of driving the same, while the burden was increased daily to keep the silicon in the iron down to 1 per cent. The third day the furnace stuck tight, and it was impossible to get the full volume of air in at a pressure of 25 pounds. This trouble yielded to large blanks, but only for a day or two. The moisture was gradually reduced to 2 grains per cubic foot, and held constant at that point. The quality of iron improved, but tonnage and fuel economy did not, on account of the sticking fast several times a week for from 6 to 10 hours at a time.

It seemed as if the dry blast, requiring an increase in the burden, had aggravated the trouble due to bad distribution and irregular interior lines. In September the moisture was reduced to 1.5 grains per cubic foot of air, in October to 1 grain, and

[1]A paper read at the Chattanooga meeting of the American Institute of Mining Engineers, Oct. 1-3, 1908.

[2]To quote from a refrigerating company's catalog. "The unit by which capacity is measured is the cooling effect or work done by the melting of one ton of ice, and is called the refrigerating capacity. This is stated in tons of ice-melting capacity per 24 hours continuous operation. The cooling effect of a ton of ice is equal to 284,000 B. T. U."

during November and December to about 0.8 grain. The tonnage of daily product remained low on account of frequent stops and our efforts to keep the iron made within "basic" specifications.[3] As a whole the furnace was worn out. The top gave way twice, and all the gas went out of holes in the platform instead of down the down-comers. The stoves and boilers caused many stops. The fuel consumption was increased by the numerous big coke blanks necessary to lower the pressure, so that the blowing engines could run.

In spite of all these difficulties the furnace was kept running, and her work steadily improved until she was blown out on Dec. 27, on account of our accumulation of basic iron, due to the closing of steel works. There were short periods of good work (when the pressure stayed down and there were no stops), in which 515 tons a day were made on 2,000 pounds of fuel per ton for several days in succession.

Figs. 1 and 2 show the condition of No. 2 when blown in and when blown out. In Fig. 2 the stock line, 22 feet 8 inches in diameter, is shown, with a large shelf below it, where the brick had stopped disintegrating on account of a change in quality. Further down there was another shelf, made up of scaffold material. The scaffold did not fall until a week after the furnace had been cleaned out, and then filled her hearth 5 feet above the tuyeres, so that she began to yield to gas and had the appearance of being in blast again. We never imagined that the scaffold could be so high up, and consequently did not find it, since we did no drilling higher than 4 feet above the mantel. Three times during the summer the furnace had been blown down to below the mantel.

The following is the record for the last six months of the blast. The increased percentage of basic iron and the lowering of fuel consumption in a furnace without a stock line and with a large ring scaffold are remarkable:

Record of Furnace No. 2.

1907.	Fuel per ton of iron. Pounds.	Tons of iron per week.	Per- centage of basic iron.	Av. stop- pages per week in minutes.
July	2,534	3,025	89.2	194
August	2,452	2,649	69.0	528
September	2,503	2,638	78.2	441
October	2,501	2,927	82.2	336
November	2,339	2,735	80.4	336
December	2,261	2,880	88.5	319

[3]These qualifications are: Silicon under 1; sulphur under 0.05; and phosphorus under 1 per cent. But in order to have a good reputation, we try to keep these elements below 0.7, about 0.03, and below 0.8 per cent, respectively.

No. 2 furnace has since been repaired, but trade conditions have not been such as to render it advisable to blow in. We have not, therefore, had the opportunity to test the dry air blast on the newly lined furnace.

Dry Blast on No. 1 Furnace.

On Sept. 25, four of the compressors having been completed, the dry blast was put on No. 1 furnace. In three days the moisture per cubic foot of air was reduced from 6.5 grains to 1.50. There was the same evidence of greatly increased heat, shown by tuyeres, slag and iron, as at No. 2 furnace. No. 1 had been in blast for 2.5 years on high silicon foundry iron. The settling for the first year had been entirely by 4-foot jumps, and the fuel consumption had been consequently high and the iron irregular as to grade. After the first year the three top rows of the five rows of bosh plates were pulled out of the furnace. This resulted in regular settling on foundry iron and lower fuel consumption. In March, 1907, however, an attempt was made to turn this furnace to the production of basic iron. It proved impracticable, because an arch formed on the step left by pulling out the plates. The furnace stuck fast for 24 hours and would not settle at all, so that she had to be put back on foundry iron. During the summer of 1907 her work became extremely bad and the iron was irregular in grade.

Upon the application of dry blast in September the furnace acted much as she had done in March, when the attempt was made to make basic iron

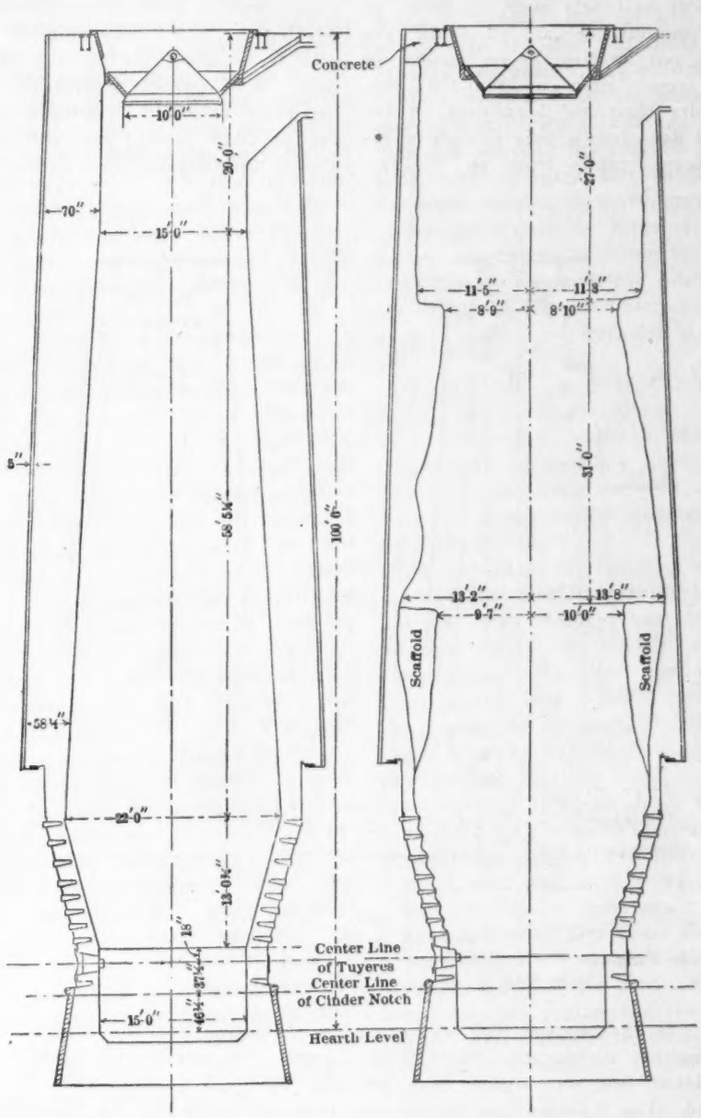


FIG. 1—FURNACE NO. 2, BLOWN IN NOV. 1, 1904.

FIG. 2—FURNACE NO. 2 BLOWN OUT DEC. 27, 1907.

—that is to say, the reduction of fuel (or, what is the same thing, the increase of burden) and the consequent lowering of the zone of fusion brought about a tendency to arch at the offset on the bosh. The daily product increased about 10 per cent, and the quality of the iron improved somewhat. The fuel consumption had to be kept relatively high in order to run the furnace at all. She was blown out on Nov. 11 on account of our accumulation of foundry iron. The dry blast had been used on her for 45 days, hardly long enough to get significant results from an old furnace. If the market had warranted keeping her in operation there is little doubt that she would have improved. Fig. 3 shows her original and Fig. 4 her wear, lines and the step on the bosh.

The effect of the dry blast on these two wornout furnaces was a matter of great interest to the management. The first effect was to make them more troublesome, but this was explained by later experience as due to the too sudden application of the dry blast. The improvement in their work was slow by reason of the necessity of forming gradually somewhat different interior lines. In the light of recent experience we are wondering whether No. 1 would not have done better had we the courage to put on a heavy burden in spite of the shelf on the bosh.

Dry Blast on No. 1 Furnace Relined.

No. 1 furnace was relined as shown in Fig. 5, there being practically no change in the lines, except that the crucible was made larger in diameter. The bosh is held by two rows of plates with a bosh jacket above, on which there is 9 inches of brick. The idea is to avoid the cooling on the upper bosh (which seemed to cause the stock to settle irregularly during the previous blast), and still to be able to maintain the lines of the bosh, so that basic iron can be made if desired. The furnace was lighted March 12, 1908. Ten days after the first iron was made the dry blast was applied. The moisture was lowered from 4.5 grains on Monday, March 24, to 1.5 grains on Tuesday. The revolutions of the engine were reduced 10 per cent at the same time and the burden was increased 5 per cent. The effect was immediate. At 9 A. M., when dry blast was applied, the silicon in the iron was 2 per cent. At 5 P. M. it was 2.75 per cent. Increased heat in the hearth was indicated by the appearance of tuyeres, slag and iron.

The rate of driving decreased but little. That night the furnace stuck fast; the blast had to be thrown off to get her down, and she began to come cold. The moisture was then lowered to less than 1 grain per cubic foot. The next day the sticking continued and the pressure went up to 15 pounds, at times stopping the engine. The applying of cold blast did not lower the pressure. It was necessary on these occasions to relieve the pressure entirely by throwing off the wind. The furnace would then settle; but the trouble reoccurred, sometimes at once, sometimes not until after 12 hours. The iron got hard and the cinder black, but both ran very hot. The burden was reduced 7.5 per cent, and the blast was increased, but that made matters worse.

After five days of unsatisfactory work, we came to the conclusion that the furnace was underburdened. The sudden application of dry air blast had greatly increased the heat of the hearth. This increased temperature, not being met by increased work in the form of heavier burden, necessarily worked high up in the furnace, causing sticking at the top of the bosh. The CO in the gas increased to 32 per cent. The burden was increased 15 per cent in one change. When this came to work, the pres-

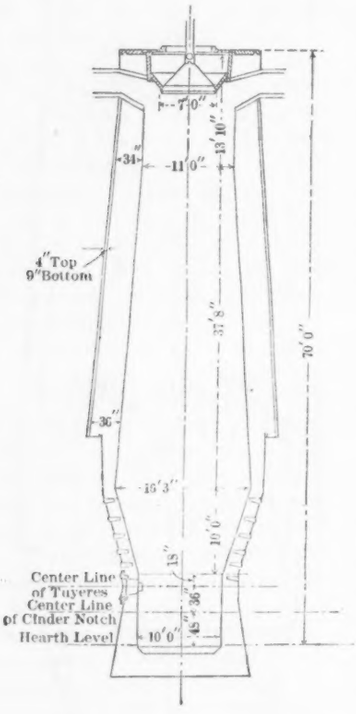


Fig. 3—Furnace No. 1 Blown in Aug. 3, 1905.

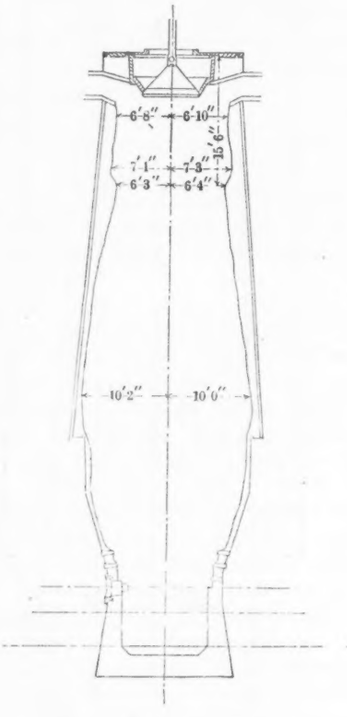


Fig. 4—Furnace No. 1 Blown Out Nov. 11, 1907.

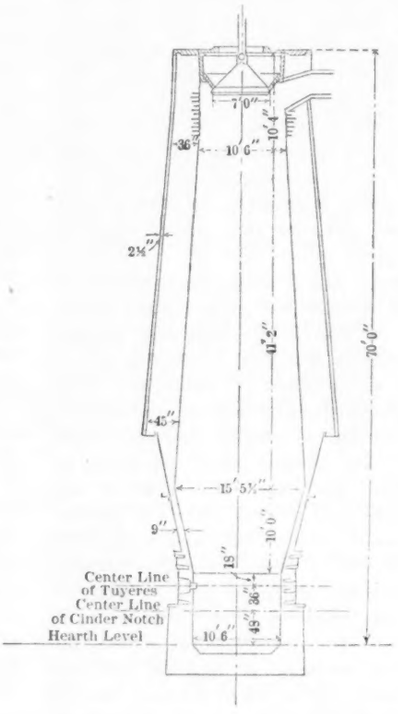


Fig. 5—Furnace No. 1 Relined, Blown in March 12, 1908.

sure held constant, and the furnace has been settling regularly since.

If there was any one thing that proved the power of dry blast to us it was this experience in putting it on too fast. At Isabella they always take at least 10 days, putting on one-quarter, and slowly burdening up, and so on. At Cardiff they followed Isabella practice. We have learned our lesson, and in the future will blow in with dry blast if possible, and if not, will put it on very slowly.

The next week, the fourth of the blast, the furnace made 1,311 tons on 2,090 pounds of fuel. She has since, in several different weeks, made nearly 1,700 tons a week on less than 1,900 pounds of fuel, with heats under 900 degrees, and an ore mixture of 50 per cent magnetic concentrates, and only 25 per cent of Lake ore. She has made 1,400 tons of iron, averaging 2 per cent of silicon on less than 2,200 pounds of fuel per ton, on the same mixture, but with 1,000 degrees Fahr. of blast temperature. The monthly records are as follows:

Record of No. 1 Furnace.

1908.	Product per week, tons.	Percentage of foundry iron.	Yield of ore, per cent.	Blast temperature, degrees Fahr.	Fuel per ton of iron, pounds.
April	1,392	3	57.5	882	2,061
May	1,532	21	56.7	920	2,059
June	1,451	77	57.1	968	2,131
July	1,501	32	57.4	907	2,006

April was practically the first month of the blast, and the early troubles occurred in its beginning. In May and June much high silicon foundry iron was made, some of it carrying more than 3 per cent of silicon. In July there were a number of small stoppages, and one of more than 18 hours. Warwick is a merchant furnace, and the iron made must suit the order book. At the present time the changes of grade are consequently frequent, and the convenience of the furnace is not considered. We have no comparative records on basic iron. The nearest is the record of forge iron in 1898, when the ores were entirely different and the blast temperatures much higher.

Product per week, tons.	Yield of ore Per cent.	Heat of blast degrees F.	Fuel per ton of iron, pounds.
1,246	61.21	1,234	2,378

The best previous record of recent years on foundry iron is that of 1906, as follows:

Product per week, tons.	Yield of ore Per cent.	Heat of blast degrees F.	Fuel per ton of iron, pounds.
1,016	57.3	1,016	2,633

Increase in Output and Saving in Fuel.

We feel that, at a moderate estimate, we are saving 400 pounds of fuel per ton of iron and making 350 tons more iron a week, notwithstanding our lower blast temperature and a much more refractory ore mixture. Although the fuel economy shown is not as great as that exhibited by the Isabella furnace, comparatively it is as good. It is a remarkable fact that all the furnaces using dry blast are showing about the same percentage of saving of coke and increase of product as compared with their previous work. The dry blast is by no means a cure all. Although it greatly increases the regularity of the furnace and enables it to be run closer, this very fact of doing away with the margin of safety, and running on a small slag volume and a silicious slag, makes the furnace more sensible to changes of coke and variations in the character of the ore mixture.

Details of Operation.

The settling of No. 1 furnace is very uniform, and she keeps level on top. On changing from one kind of iron to another we have irregularity, and occasionally have to slack her; otherwise she settles regularly. It is most unusual for her to make a jump, even during a cast. The blast pressure varies from 9 to 10 pounds per square inch, according to variation in blast heat, and the use of three different kinds of coke. The dry blast plant is about 150 feet from the No. 1 blowing engine, and the pipe is not protected from the sun. The temperature of the air arriving at the engine varies about 15 degrees in summer, between day and night. This makes a difference of, roughly, 5 per cent, in the volume of air that the blowing engine delivers. The effect upon the furnace is to make her drive about 5 per cent faster at night. On one or two occasions this lower driving has lowered the silicon in foundry iron; otherwise it has given no trouble. An attempt was made for a time to run the engine 5 per cent faster on the day shift if the sun was shining, or 2.5 per cent faster if the day was cloudy. But this was soon given up, as it was too complicated, like the changing of blast temperature to meet variations in humidity.

When the furnace is running on foundry iron, the product is wonderfully uniform in silicon and sulphur as between one cast and another or different portions of the same cast. On basic iron we can safely carry our silicon from 0.2 to 0.5 per cent without fear, and the sulphur can be held more constant than in a furnace blown with natural air. On two occasions, through a desire to lower fuel consumption, the furnace has been overburdened, and hard iron and buckshot have resulted; but a small amount of extra coke and a reduction of burden to the proper amount has brought the furnace back on good iron immediately.

There are, of course, two ways of running a furnace: First, carefully, to make a regular grade of iron; second, up to the limit, to make large tonnage and reduce fuel consumption, without reference to maintaining a given grade of iron. Running in the first way with the dry blast, it is possible, with ordinary care in keeping the stock regular, to make every cast of the grade desired. Running in the second way, some variation in silicon and sulphur occurs in the product of the dry blast, but not nearly so much as with natural air, irregular in moisture.

The gas stays high in CO (up to 26 per cent) on account of the use of 50 per cent of magnetic ore. The temperature of escaping gases on a 70-foot furnace averages 300 degrees Fahr. on basic and 500 degrees Fahr. on foundry iron.

On account of the irregular settling, the fine dust must necessarily be less; but our ore mixture has been so changed that it is difficult to make comparisons. We are inclined to think that it was a mistake to make the stock line so small in diameter, since, with the fine mixture now used, the amount of flue dirt made is considerable. It varies from time to time, even on the same mixture. For several days the amount made is excessive, as if the furnace were channeled; then it decreases again.

Explanations of Dry Blast Results.

Many furnace managers who have seen the Warwick dry blast plant have asked how we explain the results obtained. The following hypothesis satisfies us and may be of interest to others.

Of all the heat value of coke that goes into a furnace, only about one-fourth is available for heating the hearth, about one-half is sensible heat in the gas, about one-quarter reduces the ore, some is required to carburize the iron. Now the hearth is the only limit, the only place where the ordinary furnace requires more heat. It was estimated for years that dry blast would save only 3 per cent of coke, but the fact was neglected that this 3 per cent of the total fuel would be saved to the hearth alone, and that this would amount to four times

as much, that is, 12 per cent of the heat of the hearth, and as the hearth is the only weak place, the efficiency of the furnace would be increased 12 per cent. It is like a chain with one weak link. You increase the weight, say, 3 per cent of the total chain, but put all the increase of metal in the weak link, and increase the strength of the chain 12 per cent. In this case, the dry blast decreases the duty of the hearth 12 per cent and allows the resultant heat to be utilized upon increased quantities of iron and slag.

Further, this increased burden, together with regularity of heat supplied to the hearth, enables the slag volume to be decreased and the slag made more acid. This again saves fuel. The increased product decreases the radiation per ton of iron and makes another saving. This will vary with individual furnaces, and will be particularly great on those that will stand more wind. The writer believes that a very close estimate can be made on the amount of saving dry blast will make on each furnace.

The temperature of a furnace is increased enormously when dry blast is applied, particularly if it be foolishly put on too fast, as on the No. 1 furnace, but the increased temperature is soon equalized with burden and more work, and the temperature kept at the desired point as in any furnace.

Cost of Refrigeration.

Some estimate of the cost of operating the plant may be of interest. Based on a product of 720 tons a day, and running all the ammonia compressors, the labor cost is 2.5 cents a ton. In the fall, winter and spring months it is 2 cents a ton. The oil, waste, etc., should not exceed a maximum of 1.5 cents a ton. Estimating on an excessive loss of ammonia (one-third of the entire contents of the system yearly) the ammonia cost will be 1 cent per ton. The brine cost is insignificant. We estimated that 10 cents a ton would cover the cost of operation and maintenance, and we now feel that this will be more than ample.

Judging from the experience of general refrigerating machinery and plants, an annual depreciation charge of 5 per cent will be sufficient.

No charge is made for steam; for, in our experience, the dry blast plant has made no additional firing of coal necessary. The reduction in revolutions of the blowing engines spares enough power to run the refrigerating machinery, brine pump, and fan. Although the gas is leaner and of lower temperature, so that it is not as good fuel, its flow is regular; and there is no sticking after casting, with loss of gas and consequent heavy firing.

Summary.

The management of the Warwick feels fully satisfied with its adoption of the dry blast. No explanation is needed to show its great value during the past summer, of extremely high and irregular humidity, at a time when the iron market has been totally demoralized. We are now installing new Roberts center combustion chamber stoves at the No. 1 furnace, in order to obtain 1,300 degrees to 1,400 degrees F. of heat in the blast. It is a matter still open for discussion; but we feel that the dry blast will make possible the use of higher heats, and thereby indirectly lead to an additional saving in fuel.

In conclusion, attention is called to the fact that the efficiency of the dry blast has been demonstrated on a small furnace, and that the results warrant the statement that its application will be of particular value to small furnaces, as it gives them the efficiency, and somewhat of the production of iron, of the larger furnaces. The claims of Mr. Gayley have been more than confirmed by the experience of every plant that has installed the dry blast, whether the furnace was large or small, and whatever the fuel and ore mixture and the grade of iron desired.

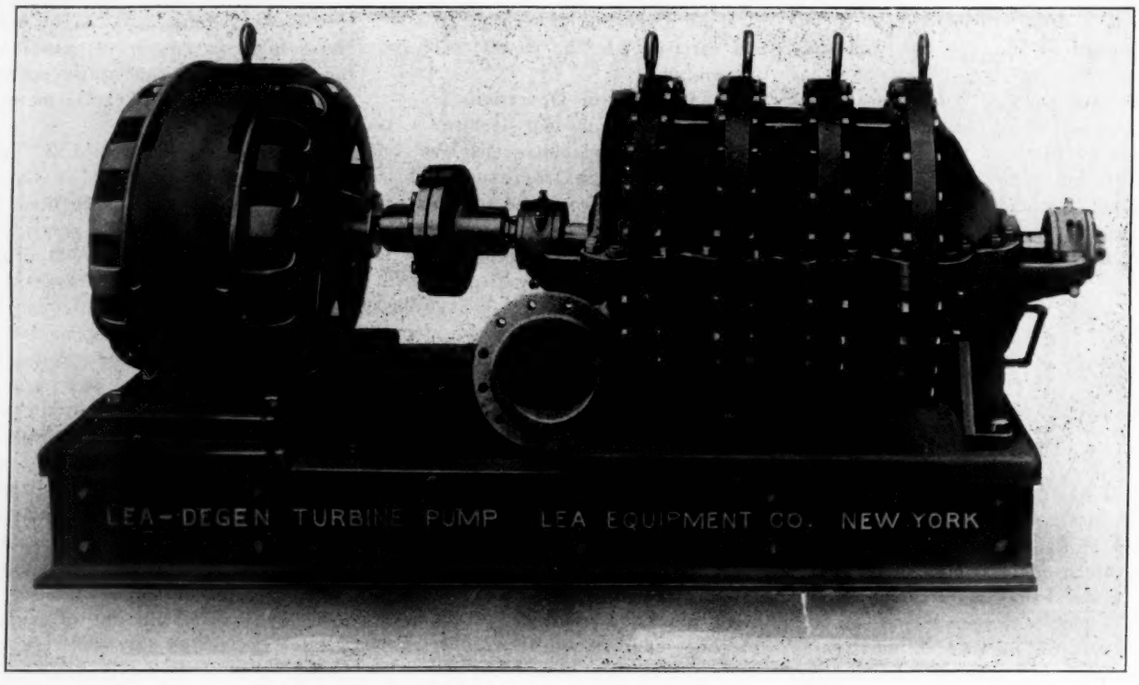


FIG. 1—THE LEA-DEGEN TURBINE PUMP WITH DIRECT-CONNECTED MOTOR.

At the plant of the Columbus Forge & Iron Co., Columbus, O., the departments devoted to manufacturing anvils and vises are being operated almost to capacity. The company reports a heavy demand for anvils and vises and orders booked for a long run ahead.

A HIGH EFFICIENCY TURBINE PUMP

The accompanying illustrations show the construction of a high efficiency turbine pump possessing many advantages, which has been placed on the market by the Lea Equipment Co., New York. The pump is known as the Lea-Degen pump and is made at present in sizes ranging from 3 to 24 inches diameter of suction and discharge.

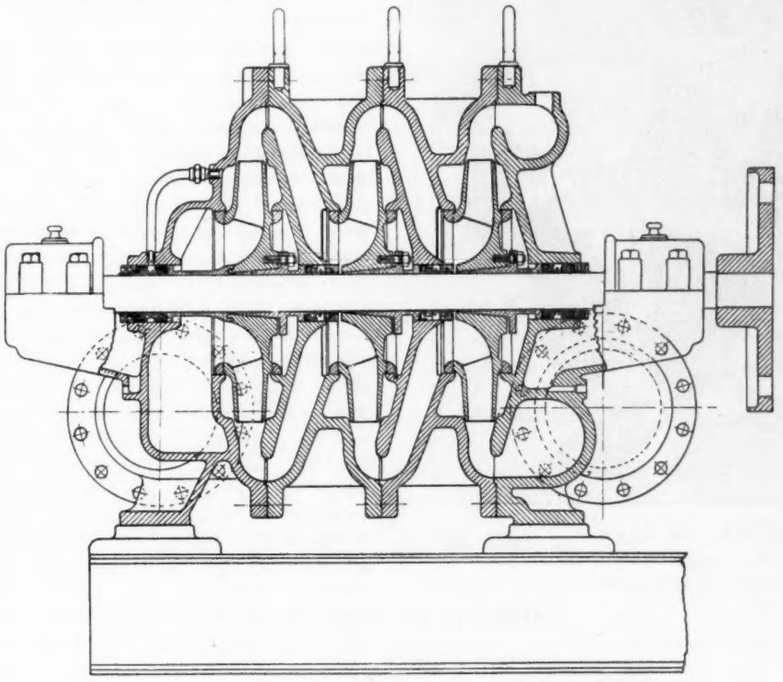


FIG. 2—SECTIONAL ELEVATION OF LEA-DEGEN TURBINE PUMP.

The most notable feature of the pump is the fact that each pump is made of separable units that are designed for heads from 7 to 1,000 feet or higher, and their capacities range from 74 to 30,000 gallons per minute. Each unit comprises a turbine runner and a casing with a specially constructed discharge pipe of varying diameter. The units are separable both horizontally and vertically, and it is possible to assemble any number of stages required. Thus, by the use of a small number of standard parts a great variety of combinations can be secured. The water as it flows from the first runner, as shown in the illustration, Fig. 2, passes into the diffusing nozzle, which in the case of a two-stage pump, leads to the inlet at the center of the second runner, whence it is discharged to a second diffusing nozzle and passes to a third stage or to the discharge pipe as desired. This can be repeated as many times as desired. After the sections are bolted together the top can be removed to permit of inspection of the packing and wheels. As both suction and discharge connections are placed below the center line of the pump these are not interfered with in any manner by the removal of the upper half of the casing.

By means of the bolted circumferential divisions of the casing the suction and discharge end of a case may be used together as a single stage pump or as many intermediate sections may be added as desired in order to obtain any desired pressure at any fixed speed. Additional stages can, therefore, be installed after a pump has been in operation without wasting any portion of the existing case. In the two-stage pump the water drawn from the source of supply is put under pressure by the first impeller and delivered to the suction chamber of the second impeller. The second impeller delivers to the water the same amount of energy as it received from the first wheel, thereby increasing the pressure. It then delivers the water into a spiral discharge conduit terminating in a diverging nozzle, connected with the main discharge pipe.

The packing consists of right angle cup leathers held in place by springs in such a manner that they are tight under all conditions. They allow the shaft to oscillate through any distance necessary and are quickly renewable. The packing is not affected by the wear of the shaft or sleeve. The cup leathers are held against a flat collar on extended pump wheel sleeves in such a manner that the leathers can follow up as they or the collars are worn. If the shaft shifts in either direction the leathers follow without changing the location of the leather in relation to the collar, thus insuring a water tight joint at all times. A spiral spring between each pair of cup leathers insures their seating against the collars before pressure is put on the pump.

The shafts are made straight throughout their length and have no shoulders except at the bearings. The wheels are held in place by taper bronze sleeves to allow the easy removal of the impellers, even though the parts should become rusted. This construction is clearly shown in the illustration, Fig. 2. The sleeves cover the shaft throughout its exposed parts, and also form parts of the automatic packing. On the outside of the main bearings, at each end, is placed a ball thrust bearing with ad-

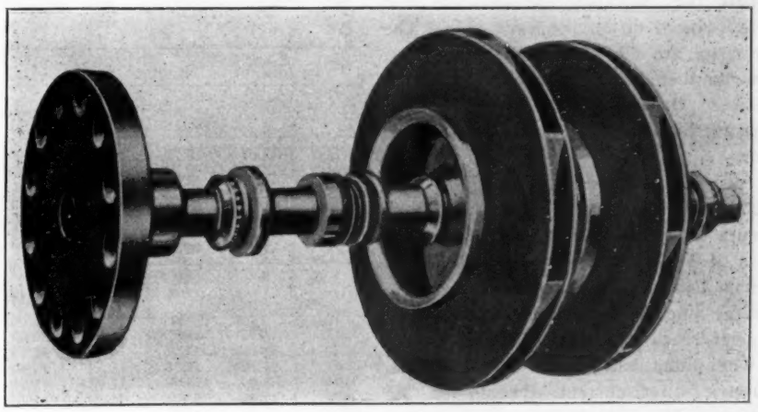


FIG. 3—SHAFT WITH TWO IMPELLERS AND BEARINGS.

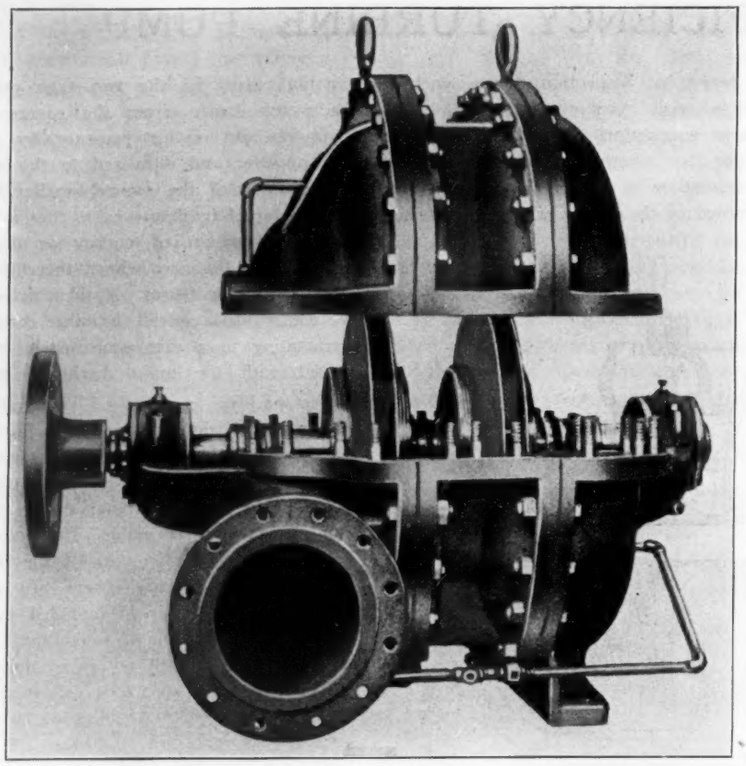


FIG. 4—TOP CASE REMOVED, SHOWING EASE OF EXAMINING IMPELLERS AND AUTOMATIC PACKING.

justing collars for shifting the shaft endwise to balance the end thrust of the pump runners. This balancing is accomplished by means of variation in the water space on both sides of the wheel between the rim of the wheel and the casing. Experiments have shown that as the wheel is moved laterally in the case, the pressure between the wheel and case increased on the side where the clearance was greatest, and was reduced on the opposite side. The bearings are all of the self-oiling type and as there is no connection whatever between them and the suction or discharge lines, no water can leak into them.

An extensive series of tests was conducted on a two-stage pump by Prof. James E. Denton, of the Stevens Institute of Technology, Hoboken, N. J. The pump had a 10-inch suction and discharge line and impellers 24 inches diameter, each with eight blades.

The pump was driven by a General Electric direct-current dynamo of 385 amperes and 220 volts capacity, used as a motor and direct-connected to the pump shaft. It was arranged to lift water by suction about 7 feet and to deliver it through a 10-inch throttle valve, to a 6½-inch bell shaped nozzle, which discharged it to a weir tank about 25 feet long, 10 feet wide and 10 feet deep. The water flowed through a rectangular notch 3.02 feet wide in a ¼-inch beveled iron plate, set in the middle of the end of the tank and about 7 feet from the bottom. The discharge of the pump was adjusted by means of a Pitot tube applied under the dicharge nozzle. The amount of water flowing over the weir was calculated by means of the Francis formula

$$Q = 3.33\ (l - 0.2\ h)\ h^{\frac{3}{2}}$$

in which Q is the cubic feet of water flowing over the weir per second; l is length of weir in feet, and h the effective head in feet measured from the level of the crest to the level of the still water above the weir. The weir heights were taken with a hook-gage in a barrel which communicated with the tank at a point 13 feet back of the weir notch. The surface of the water approaching the weir was made perfectly smooth by means of a grill lattice 6 feet from the discharge nozzle and by dam-boards set by trial. The leakage of the weir was frequently determined and it remained practically constant at 18 gallons per minute. This quantity was added to that determined by the weir formula. A mercury gage was placed in the suction line and a pressure gage in the discharge line. The total lift

RESULTS OF PUMP TEST.

Weir Gallons Per Min. G	Total Lift, Feet.	Outlet Pressure, Feet.	Suction Lift, Feet. -	Water Horsepower.	Horsepower to Drive Pump.	Weir Height, Feet. H	Pitot Ratio. C	Watts to Drive Motor.	Revs. Per Min.	Efficiency. E
1	2	3	4	5	6	7	8	9	10	11
TABLE I—400 REVOLUTIONS.										
2828	33.65	20.29	13.36	24.08	34.22	0.754	0.982	29830	401	70.37
2574	38.55	26.32	12.33	25.10	33.78	0.707	0.981	29484	402	74.30
2296	43.63	32.41	11.22	25.34	32.61	0.653	0.988	28576	400	77.70
1984	47.49	37.29	10.22	23.84	30.96	0.590	0.992	27300	401	77.00
1328	52.39	43.98	8.41	17.60	24.86	0.448	.....	22570	401	70.79
852	55.00	47.69	7.31	11.86	19.02	0.330	.....	18042	401	62.42
0	54.93	48.16	6.77	0	7.7	0.0	.....	9400	402	0
TABLE II—500 REVOLUTIONS.										
3517	44.81	27.85	16.96	39.87	62.58	0.878	0.965	51700	501	63.71
3207	58.09	43.17	14.92	47.13	63.64	0.823	0.987	52496	500	74.05
3005	63.12	49.28	13.84	47.99	62.63	0.787	0.984	51736	500	76.62
2794	67.44	54.48	12.96	47.67	61.41	0.748	0.996	50830	500	77.62
2428	72.38	60.84	11.54	44.46	58.16	0.678	0.995	48400	500	76.04
1929	79.09	69.26	9.83	38.60	51.99	0.578	0.989	43800	500	74.24
1289	84.26	76.16	8.10	27.48	41.11	0.438	.....	35680	501	66.84
0	83.04	76.27	6.77	0	12.07	0.0	.....	14012	502	0
TABLE III—600 REVOLUTIONS										
3806	50.65	32.11	18.54	48.58	89.40	0.928	0.974	74365	600	54.34
3440	95.13	34.10	16.36	82.47	106.50	0.864	0.973	92115	600	77.44
3235	100.71	36.97	15.31	82.10	105.30	0.828	0.987	91052	600	77.97
2554	110.46	42.45	12.40	71.09	95.40	0.703	0.997	80220	600	74.52
1805	118.21	46.95	9.76	53.77	76.60	0.553	0.998	63300	598	70.19
1139	125.67	50.90	8.09	36.07	60.10	0.401	.....	51012	599	60.02
0	122.08	49.80	7.04	0	22.90	0.0	.....	26880	600	0

of the pump was determined by adding the vacuum shown by the mercury gage to the pressure above the atmosphere, shown by the pressure gage, the pipe diameter being the same at both points and the two gages being at the same level.

The pump was designed for practically equal efficiency for the range of speeds between 400 and 600 revolutions per minute. Efficiency tests were, therefore made at these revolutions, results of which are shown in the tables, I, II and III:

At each speed the steps in the determination of the maximum efficiency were as follows: The pump was primed with the throttle valve in the suction line closed. The throttle valve was then set wide open and connection made with the mercury columns, and the speed then adjusted by a rheostat. The required data were observed at five-minute intervals until the average of the readings was practically constant. The throttle valve was then reset to obtain a series of reduced rates of flow, which, by preliminary tests, were known to be sufficient to establish the gallons-lift curves, shown in Figs. 6 to 9. No data were recorded at a speed varying more than two revolutions from the assigned speed. After the gallons-lift curves were secured the pump was disconnected from the motor and the power of the latter absorbed by a prony brake over the same range of watts applied to drive the motor during the pump tests. From these readings the brake horsepower-watts curves, Fig. 9, were derived. For 400 and 500 revolutions these curves are straight lines, but at 600 revolutions the straight line does not obtain, probably because the speed had to be regulated by changing the position of the brushes of the driving

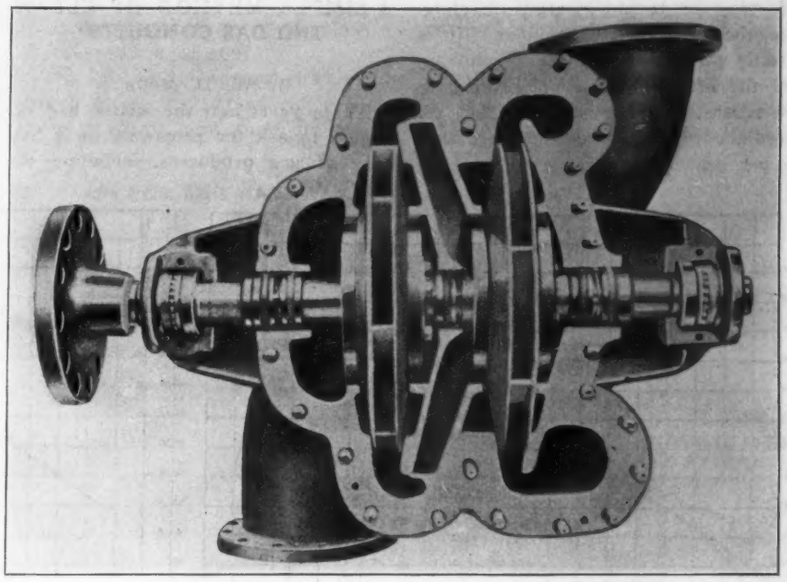


FIG. 5—TOP CASE REMOVED, LOOKING DOWNWARD.

motor. From these curves the horsepower corresponding to the watts applied to drive the motor during the pump tests was determined, and taken as the horsepower to drive the pump. (Column 6, tables I-III).

The useful work of the pump (column 5) is:

$$\text{Water horsepower} = \frac{W \times h}{33{,}000} = 0.000252 \times G \times h$$

in which W is the pounds of water delivered per minute, h the total lift in feet, and G the gallons of water per minute.

The total lift is the sum of the suction vacuum (column 4) and the pressure (column 3), in front of the throttle valve, expressed in feet of water. The efficiency is then (column 11)

$$E = \frac{\text{Water horsepower}}{\text{Horsepower to drive pump}}$$

The ratio of the quantity of water given by the weir to that given by the Pitot tube is shown in column 8. This ratio is the value of the coefficient C in the formula for cubic feet per second

$$Q = C \times \text{Area of nozzle} \times \sqrt{2g \times \text{pitot head}}.$$

The tests show that the pump afforded the following results under conditions of maximum efficiency:

Rev. per min.	Efficiency, per cent	Cap. per min., gal.	Lift, feet.
400	77.7	2296	43.6
500	77.6	2794	67.4
600	77.97	3235	100.7

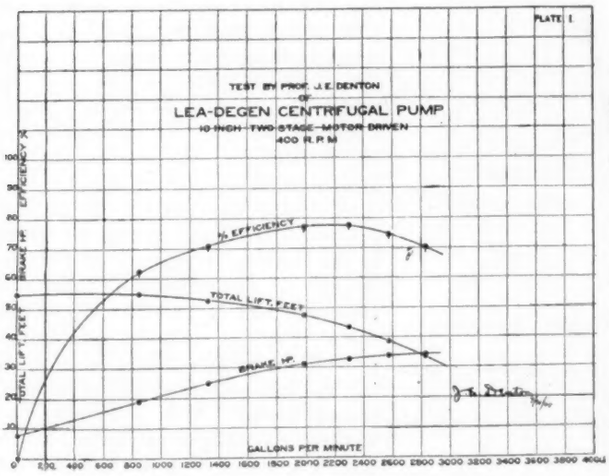


FIG. 6—GALLONS-LIFT CURVE AT 400 REVOLUTIONS PER MINUTE, LEA-DEGEN TURBINE PUMP.

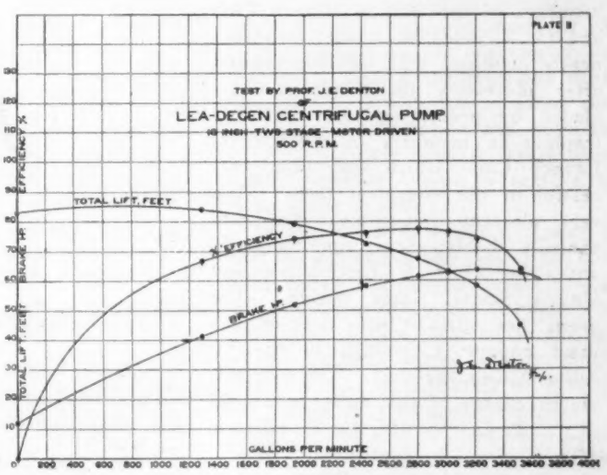


FIG. 7—GALLONS-LIFT CURVE AT 500 REVOLUTIONS PER MINUTE, LEA-DEGEN TURBINE PUMP.

It may be roughly stated, therefore, that the capacity at maximum lift is directly proportional to the revolutions, and the lift or head is proportional to the square of the revolutions. At each speed the efficiency averaged more than 76 per cent over a range of 600 gallons capacity for the lower two speeds and 900 gallons at the higher speed, the head remaining nearly constant. Results of the various tests are plotted in the curves, Figs. 6, 7, 8 and 9.

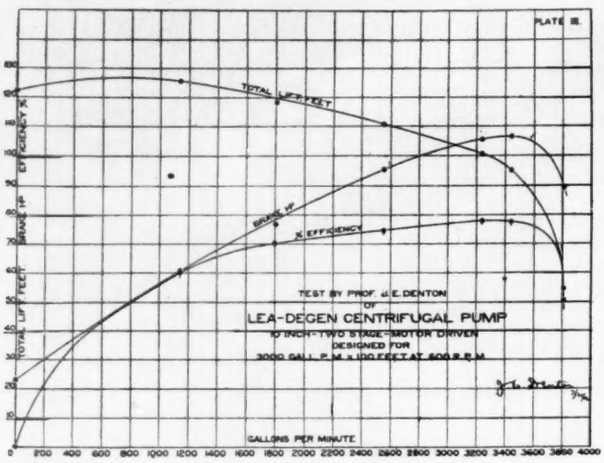


FIG. 8—GALLONS-LIFT CURVE AT 600 REVOLUTIONS PER MINUTE, LEA-DEGEN TURBINE PUMP.

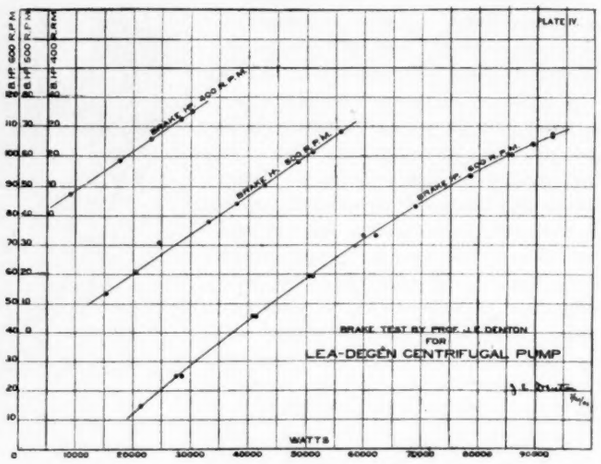


FIG. 9—BRAKE HORSEPOWER-WATTS CURVE, LEA-DEGEN TURBINE PUMP.

A Delightful Outing.—The Pratt & Letchworth Co. and the United States Hame Co., both of Buffalo, united Saturday, Sept. 12, in giving the annual outing to the employes, of whom there were several hundred, accompanied by their families. The outing was held at the Bedell House on Grand Island. The day was given over to sports and good fellowship. A luncheon was served earlier in the afternoon and a dinner at night. The dinner was participated in by the members of the Buffalo Launch Club and O. P. Letchworth, who is prominently identified with both companies, after addressing the employes, concluded by presenting two handsome trophies to members of the Buffalo Launch Club, which had been successful in the afternoon race. By a very pleasant arrangement the club annually holds races simultaneously with the Pratt & Letchworth and United States Hame outing. The event has grown into one of the most popular gatherings in the locality during the year. The committee in charge of the outing consisted of O. P. Letchworth, G. P. Warner, Mrs. George J. Letchworth, W. C. Houck, P. W. Kerr, Proctor Carr, C. L. Wiedrich, C. W. Sherman and J. P. Pero.

A SIMPLE METHOD OF CLEANING GAS CONDUITS.[1]

By W. D. Mount.[2]

Three years ago the writer had occasion to ask for proposals on a battery of gas producers, including the design of the distributing conduit and branches, though the latter were to be built under separate contract, and by parties other than the contractors for the producers. As the producers were to supply gas to furnaces in continuous operation over long periods, which, for efficient working, required very uniform conditions of heating, the question of an uninterrupted flow of gas of uniform quality became of exceptional importance. We found that all of the builders of producers whom we asked to submit specifications and quotations could, in a general way, meet the conditions of uninterrupted service; that is, it would be necessary to shut the gas off a few hours once each week, and clean the accumulated soot out of the conduits.

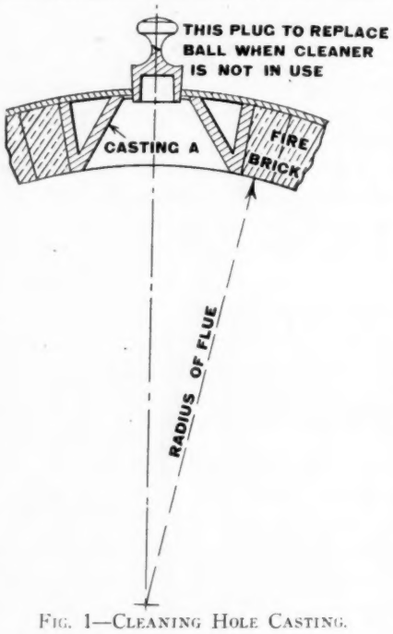


FIG. 1—CLEANING HOLE CASTING.

Our idea of continuous service was somewhat different. It did not mean shutting down once a week, or once each month, but meant a condition of operation absolutely without interruption for an indefinite period, and we finally made this a condition of our acceptance of the contract. The installation was to be in a department already in operation for several years, and where the use of gas was not originally contemplated. Therefore, the distributing conduits had to be designed to meet existing conditions of space and apparatus in a department already much overcrowded, so much so in fact that a duplicate system of conduits, one to be in use, while the other was being cleaned, designs for which were submitted by one builder as the only possible solution of the condition of uninterrupted service, was entirely out of the question, to say nothing of the greatly increased cost of installation.

In placing the contract our decision was not based altogether on the merits of the different producers offered, but largely on the method or system of cleaning, and a design of distributing conduits which seemed to provide the greatest facilities for meeting the imposed condition of uninterrupted service. After carefully canvassing the designs submitted, a contract was placed with the Morgan Construction Co., Worcester, Mass. I may say at this point that the congested

[1] A paper read at the Detroit (June, 1906) meeting of the American Society of Mechanical Engineers.

[2] General superintendent the Mathieson Alkali Works, Saltville, Va.

condition of the department in which the producer plant was to be installed, as well as the location of existing apparatus, precluded the possibility of using underground conduits, and made it necessary that an overhead system be adopted, and, as already stated, the lack of room prevented the system from being in duplicate.

The plan of action arranged for, as outlined by the above company, consisted in providing facilities in the way of openings in the conduit for blowing depositions of soot through into the stack, by means of steam jets, connections to the base of the stack being arranged from each distributing conduit. The above outlined operation was not to occupy more than 15 minutes, during which time the gas was to be shut off, but the heat in the furnace was not to be seriously impaired. The condition of uninterrupted service, it is to be noted, was not fully met, and the writer was confident at the time, and subsequent developments proved his prediction to be correct, that when the gas was shut off, even though as small amount of time as 15 minutes, it means shutting off the product from the furnaces, or, in other words, it means an absolute shut down of the department during the operation of cleaning.

The producers and distributing conduits, however, were installed as designed, and the proposed method of cleaning put into effect, with the exception that compressed air was used

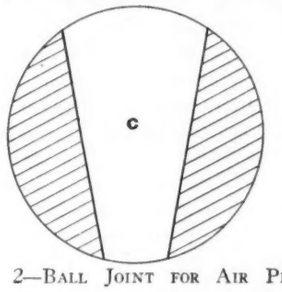


FIG. 2—BALL JOINT FOR AIR PIPE.

in place of steam. Measured by experience gained, the method was a great success, but as a means of keeping the gas conduits clean, it was a failure. It did not take long, however, to determine that the idea was all right, and that our lack of success was due to the fact that the facilities provided in the design for applying the air or steam were inadequate, as well as improperly located.

The experience gained in the early days led finally to the development of the system to its present form, which is fully detailed in the accompanying sketches, Fig. 1 and Fig. 3, and which I am glad to report, has been so successful that for the past 18 months we have never for a moment had the gas shut off from our distributing conduits for the purpose of cleaning out the depositions of soot.

The method and apparatus, as will be noted from the drawings, are extremely simple, and quite out of proportion to the results obtained. We have so much confidence in compressed air that we are almost inclined to believe that it is one of the things essential to the successful operation of the method, another being accessibility to the main conduit and its branches. The air should be thoroughly dry and at not less than 80 pounds per square inch pressure. We find in practice that the connections from the conduit to the base of the stack are, for cleaning purposes at least, entirely unnecessary. The only time they are used is in making repairs on the conduits when they are opened for the purpose of drafting out the gas. We also find that about 75 per cent of the soot is deposited in the drop legs immediately behind the producers, the balance being dislodged by means of the air jet from the brick lining and carried along with the current of gas to the furnaces, where it is almost wholly consumed.

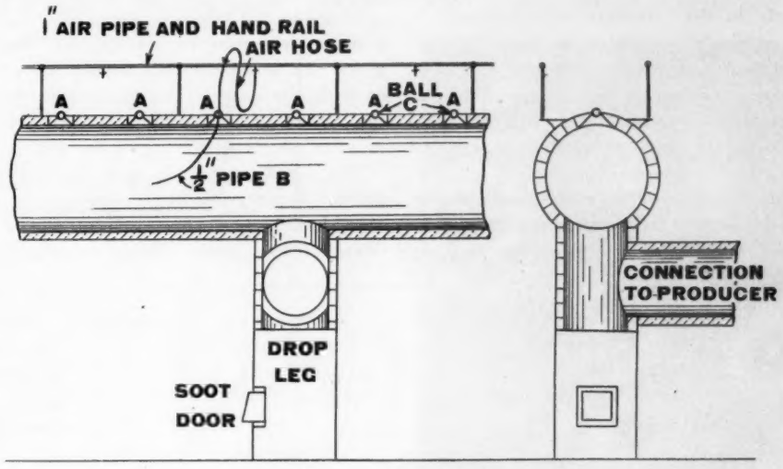


FIG. 3—MAIN CONDUIT.

Referring to Fig. 3, AA are openings in specially designed castings (see detail Fig. 1) spaced along the top of the conduit and of the same depth as the brick lining. C is a cast iron ball of a diameter sufficient to close the opening in A and free to slide on the ½-inch bent pipe B (see detail Fig. 2), which is connected by hose to the air main; a 1-inch pipe serving also as one of the hand rails along the top of the conduit. The openings AA are spaced at a distance nearly equal to the diameter of the conduit (although this spacing is not necessarily fixed), which we have found by experience to be about right for effective work, and in any event they should not be at a distance exceeding 6 feet.

The bent pipe B should be long enough to reach all parts of the conduit from A to A. The pipe, however, for convenience in handling cannot be over 8 feet, and its length, therefore, in a measure, fixes the distance from A to A. Permanently attached to the end of the pipe is a short length of air hose, having attached to the other end the male portion of a standard ½-inch Joy coupling. Located along the hand rail air pipe, at distances from two to three times the distance between AA, are located cocks and the female portion of the Joy coupling. Attaching the hose to the air main, therefore, is a very simple matter and consumes a minimum of time.

In cleaning we begin at the producers and work toward the furnaces. To the casual observer it would seem that the operator did nothing more than stick the bent pipe through the opening A and turn on the air. This, however, is, of course, the most insignificant part of the operation. It is necessary that the pipe be given a circular motion, which will bring its discharge end in contact with all parts of the brick lining from one opening to another. A careful, conscientious workman will, in a little time, become very expert in the operation, and when the work is properly done, it can be absolutely depended upon to remove all depositions of soot.

In conclusion, it is only necessary to say the gas is not shut out of the conduit during the operation of cleaning, nor is its flow in any way checked. The producers do not seem to be affected in the slightest degree; in fact, cleaning is conducted absolutely without interruption to producers, conduits and furnaces, and that it is efficient is evidenced by the fact that, when our conduits have been opened for repairs, we have always found them clean to the brick lining.

MODERN OFFICE PRACTICE—IV

Catalog Filing

By Ridgley Newcomb

In the large business office, particularly in the purchasing department, it is desirable to keep a large file of catalogs, covering a wide range of subjects. In recent years no office is complete without its catalog file and efforts are made to make additions to it. In the course of time these catalogs pile up and then the question has to be settled as to what shall be done with them, how to file them so they will all be available according to their subjects.

The card index suggests itself at once for the indexing part, and for the files nothing is more suitable than the ordinary box file, familiar objects in any office. They resemble a book, are about a foot wide, a foot high and 3 inches thick. Each file will hold a number of the smaller catalogs. In the case of the catalog being a large book itself, it is given the same number as that of the subject (Carpenter Tools, 14; book would be 14a) with a letter, "a" or "b." Sometimes there will be too many small catalogs to get into one box file, when a second one may be brought into use, given the same number with a letter, as with the case of the book, care being taken not to duplicate the letters in any one subject.

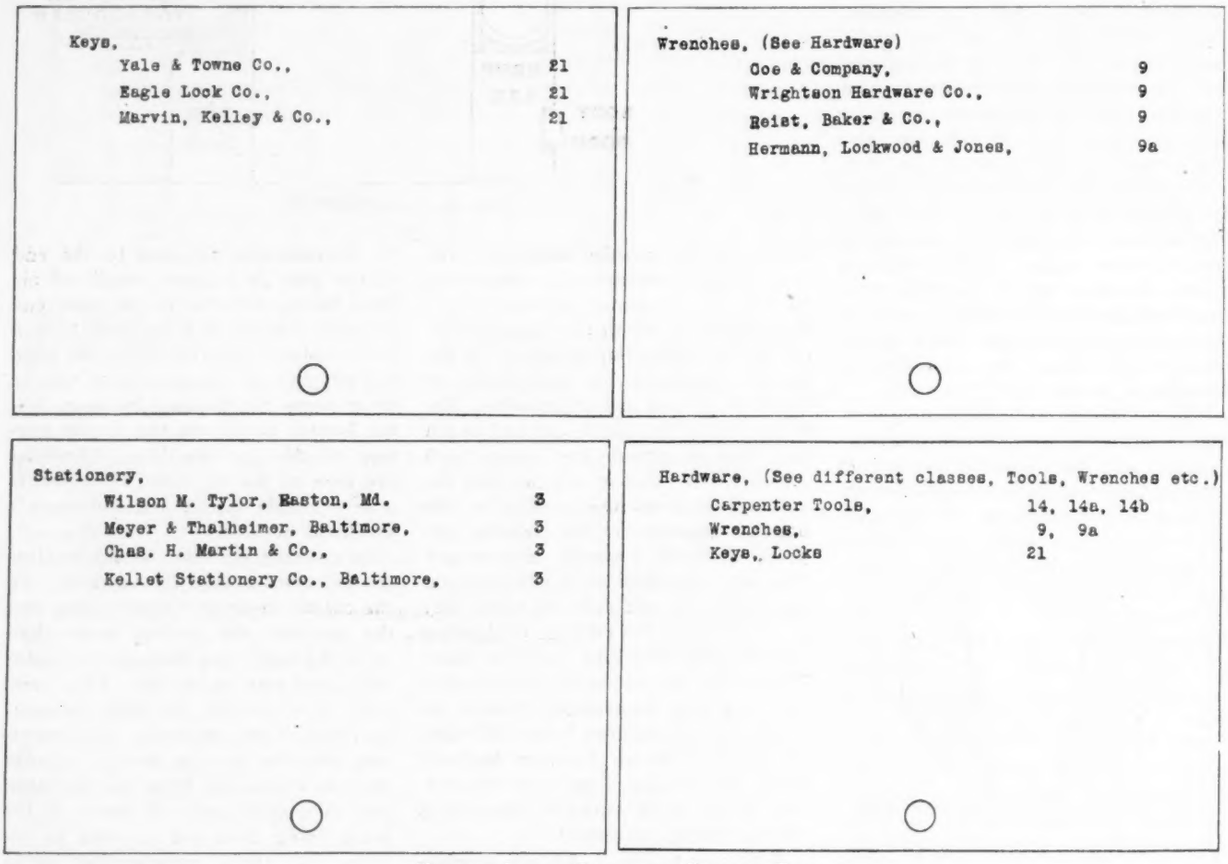
The card index, however, is the thing. Better satisfaction may be had if a 4 x 5-inch card is used. A two-drawer card index cabinet should be provided. One drawer for the subject indexing and the other for the firm indexing.

On receiving a catalog, it is filed according to the material it covers, and the next highest, unused number is given it. Suppose it is a catalog of carpenter tools, the first one to be received. The last box file is numbered 13. A new box file, numbered 14, is put on the shelf and in it is put the new catalog, marked conspicuously either by a gum sticker, or blue pencil, with the box number.

A card is made for "Tools, Carpenter," and the name of the sender of the catalog is written on the first line below it, with the box number at the end of the line. This card is filed in the subject drawer under "T." Another card is made for the firm issuing the catalog, in this case "Nevius, S. A., Easton, Md.," with the box number at the end of the line, and filed in the drawer having the firm names, under the initial letter "N."

As additional catalogs are received, covering this class of goods, the names of those issuing them are added to the cards in the subject file, and all are put into the same box, until that box will no longer hold them, when another box is used, and given the same number with the suffix "a." If a large book is received, too large to go into the box file, it is marked with the class number and a letter, and so indexed.

By using the class numbers the clerks soon get them fixed in their minds and rarely have to refer to the in-


Keys,
Yale & Towne Co., 21
Eagle Lock Co., 21
Marvin, Kelley & Co., 21
Wrenches, (See Hardware)
Coe & Company, 9
Wrightson Hardware Co., 9
Reist, Baker & Co., 9
Hermann, Lockwood & Jones, 9a
Stationery,
Wilson M. Tylor, Easton, Md. 3
Meyer & Thalheimer, Baltimore, 3
Chas. H. Martin & Co., 3
Kellet Stationery Co., Baltimore, 3
Hardware, (See different classes, Tools, Wrenches etc.)
Carpenter Tools, 14, 14a, 14b
Wrenches, 9, 9a
Keys, Locks 21

Typical Index Cards for Catalog File.
A Card is Made for Each of the Above Firms and Filed Alphabetically.

dex. If key catalogs are wanted, the clerk remembers that is class 21 and the box or boxes are, of course, numbered the same. If he does not remember it, it is but a moment's work to look into the index for it.

A head of a department may come in and want to see Reist, Baker & Co.'s catalog. The clerk may not know the class, but turning to the firm index, he finds it under the initial letter "R" and notes that the box number is 9.

Tools, Carpenter

S. A. Nevius, Easton, Md.	14
Anderson & Ireland, 14 Light St., Balto.	14
H. E. Clark & Co.,	14
Mullikin & Co., 14 Dey St., New York,	14
Harris, Smith & Jones, Wilmington, Del.	14a
Morgan, Pelter & Sons,	14a
Menton, Martin & Watmough,	14a
Hitechew, Hoddinott & Keys,	14b

TYPICAL INDEX CARD FOR CATALOG FILE.

In the case of large classes, like hardware, it is best to sub-divide it, as shown by the accompanying illustrations, putting in a card for the general class, under its initial letter, giving the names of the sub-divisions.

The box files may be kept on shelves high up on the walls out of the way in the office using them or in another room. The ideal arrangement would be to have them in charge of the clerk who files the correspondence, thus putting all the files under one direction. The boxes are, of course, placed on the shelves in numerical sequence. When a catalog is taken out of a box, a slip of paper should be left in its place, giving date taken out and by whom. This slip is to be destroyed when the catalog is returned.

In this system the equipment is simple and economical. The card index tray and cards will cost $10 and the box files for several years will not exceed another $10.

The class indexing, with the boxes the same number as the class, simplifies the whole system, and with the card index to furnish the class, everything is complete, so as to guarantee that the user will be able to get any one or all of the catalogs in his file on any given materials.

The cards used in the illustrations give the idea for a few classes.

SPECIAL APPLICATIONS OF STANDARD CIRCUIT BREAKERS.

In the development of new applications of machinery of various kinds, the conditions often arise which call for special apparatus or certain applications of old apparatus. Standard apparatus, if properly designed, can be readily adapted to suit these special conditions, with very small changes, and the better the design, the more special applications it will fit. A noteworthy example of this is shown in a recent application of circuit breakers, as shown in the accompanying illustrations. In this case a large mining company desired a circuit breaker which would open the circuit of a motor on overload, which could also be opened from a distance by the operator at the machine and which could be held open by the operator at the machine, regardless of the man in charge of the motor. Inasmuch as an absolute interlocking of the machinery was necessary, no chances could be taken of the motor being started when men were working about it.

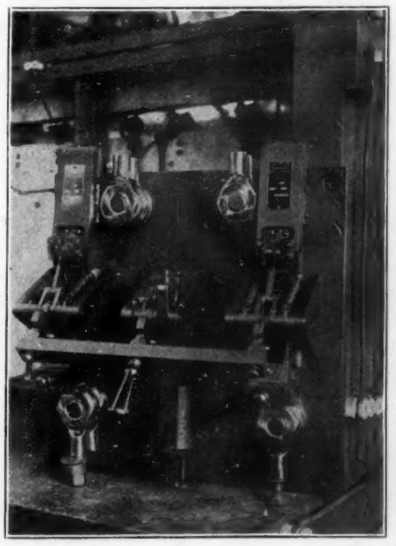


FIG. 1—CIRCUIT BREAKER IN CLOSED POSITION.

The illustrations show this breaker in the open and closed positions and illustrate the flexibility of the standard design of the type "CC" circuit breaker, manufactured by the Westinghouse Electric & Mfg. Co., Pittsburg. As will be noted from the cuts, this breaker consists of two single-pole breakers and a dummy pole, all closed by the same handle. Each of the single-pole breakers is equipped with an overload coil, and the operation of either overload coil opens the breaker. as in the standard design. In addition, the breakers can be instantly opened by throwing the handle up.

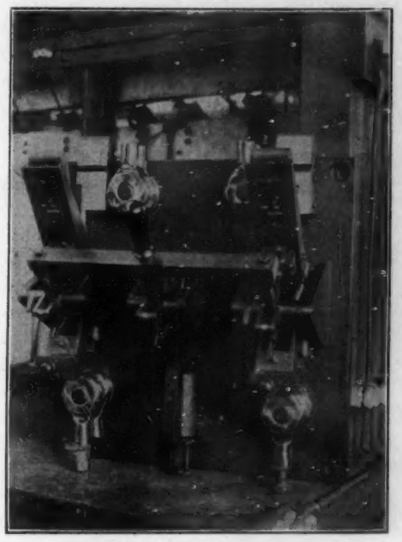


FIG. 2—CIRCUIT BREAKER IN OPEN POSITION.

In addition to these two overload coils, there is placed on the dummy pole a shunt tripping coil suitable to be left in circuit continuously. Upon closing the circuit through this shunt closing coil, the middle pole is tripped out and this in turn trips out both of the active poles, thus opening the breaker. In addition to this, the handle is locked down by an auxiliary latch, in such a way that it cannot be closed down until current is taken off the shunt tripping coil, allowing the core to drop. It is thus impossible for any one to close the circuit breaker, so long as this coil is energized.

In the particular application under discussion, small knife switches were placed at various points, each switch closing the circuit through this shunt tripping coil. Whenever it is desired

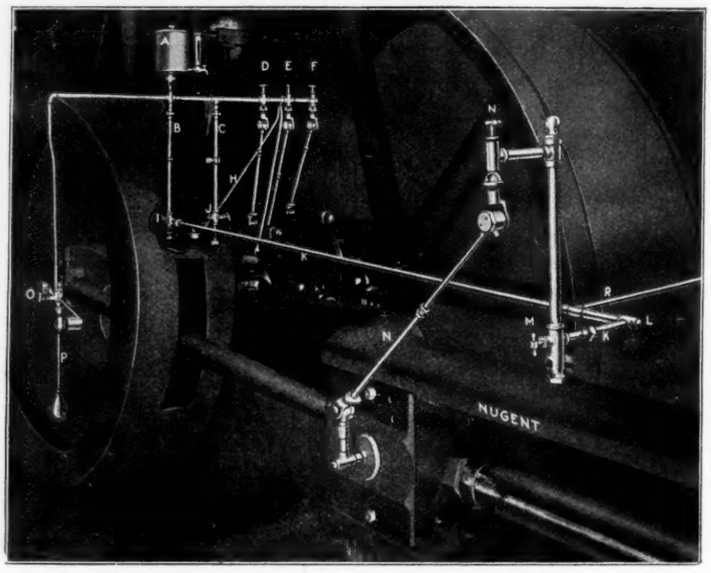
to stop the machine and hold it in a stationary position, one of these small switches is thrown in, which immediately opens the breaker and locks it permanently open, until the switch is opened. The breaker is controlled entirely from alternating current circuits, and it operates large three-phase motors, opening two legs of the three-phase circuit. The breaker is adapted for mounting directly on the wall, the connections being on the face of the panel.

SOME COKE DUMPING CARS.

The accompanying illustrations show a new type of coke dumping car which has been brought out by the Canton Foundry & Machine Co., Canton, O. The cars are suitable for use with coke at the cupola or for sand or clay. They are built entirely of steel, with underframes of channel sections, and are made as heavy as required for the service to which they may be put. They dump either to the right or left by means of a spur gear carried on the trunnion of the car body and operated by a pinion to which a crank is attached. They balance when either full or empty and the car body locks itself when returned to the upright position. The car body being dumped by gearing makes it easy to handle. The cars are made in any length or height to suit the capacity desired. Those shown in the illustration have a hopper 4 feet wide at the top, 4 feet 3 inches long and 4 feet deep. They have a capacity of one ton of coke or two tons of coal. The total length of the car over all is 5 feet 4 inches.

THE NUGENT GRAVITY OILING SYSTEM.

The accompanying illustration shows a Corliss engine in Burlington, Iowa, equipped with the Nugent gravity oiling system as supplied by William W. Nugent & Co., 20 West Randolph street, Chicago. The oil is fed from a tank A, mounted upon one of the standards, through feed pipes B. A gage glass on the tank shows the amount of oil contained within it and a valve shuts it off from the engine. The tank may be placed at any point desired, preferably on the wall near the throttle valve, so that the engineer may turn on the oil at the same time that he starts the engine. The feed pipes lead to the various points of the engine where oil is required, and all oil cups are dispensed with, effecting a considerable saving in oil- and labor. All the important bearings of the engine are fed from the one reservoir, and there are sight feed regulating valves at each bearing. Reciprocating bearings, such as the crank pin, cross head pin and eccentrics, are oiled by means of crank pin and telescopic oiling devices, and are insured a constant supply from the main tank at all times.



Nugent Oiling System Applied to Engine.

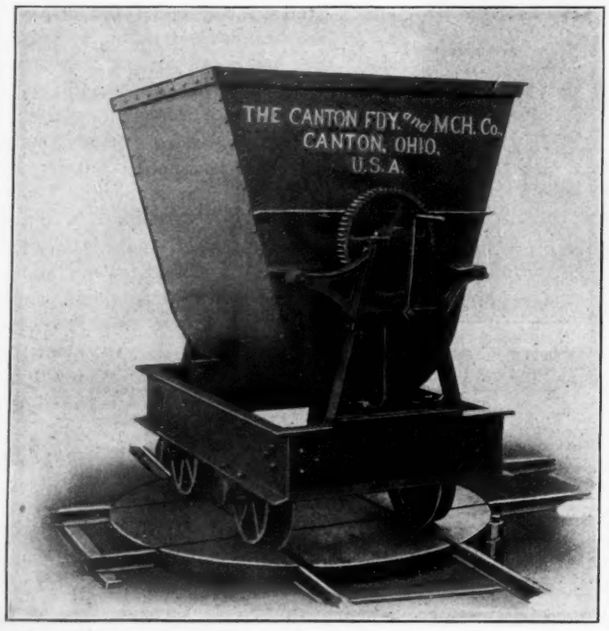


Fig. 1—Canton Dumping Coke Car in Upright Position.

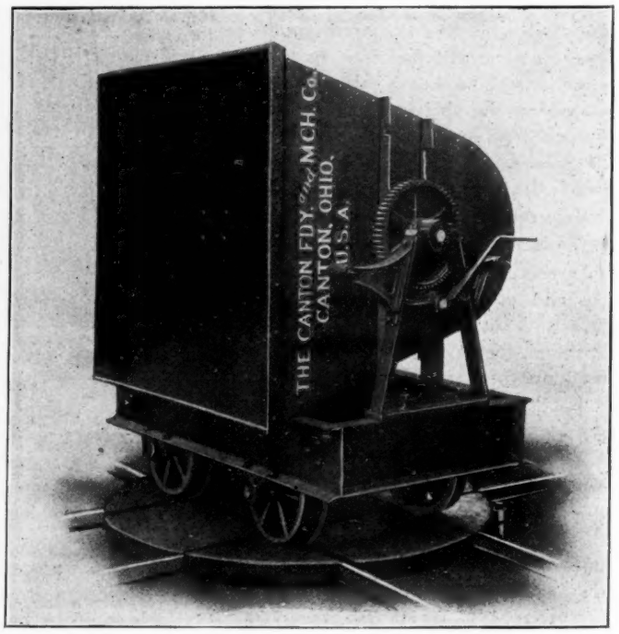


Fig. 2—Canton Coke Car in Dumping Position.

Dullest Market in Many Months.

The apathy that had been apparent for several weeks culminated last week in bringing the market almost to a "dead center." The stagnation was quite as apparent in London as in New York, suggesting a world-wide speculative dullness.

Monday's opening was extremely dull, prices advancing slowly and losing again at the close. Copper stocks were weak. On Tuesday, a rumor of a railroad magnate's illness caused a general market decline, but trading was featureless. Dullness was the only apparent characteristic of Wednesday, but prices closed steady, and on Thursday, the New York market was the quietest since early summer, prices being irregular. Friday's market was more active, and on the whole the market advanced, closing higher. American Can preferred for the week scored the largest gain among industrial stocks. Saturday's market was active and prices higher, closing at the best.

Money on call ranged nominally from 1 to 1½ per cent, rising to 2 per cent on Wednesday solely when corporation requirements were being taken care of. During the week the market displayed great ease, despite October interest and dividend requirements. A very limited business in the week was noted in the time loan market. The report of the clearing house banks showed surplus decreased $8,638,325; loans decreased $276,800; deposits decreased $12,723,500, and the ratio of reserve 27.9 per cent. State banks showed loans increased $1,254,600; deposits increased $5,001,300; the percentage of reserve 31.4, a decrease of 0.2. Trust companies showed loans increased $9,334,200; deposits increased $18,572,500; percentage of reserve 34.2, an increase of 0.1. Clearing house exchanges in the United States showed a decrease of $6,254,860 from last week, New York showing a decrease of 14 per cent over a year ago. Commercial failures reported in the United States were 234, compared with 279 the preceding week, and 202 the corresponding week last year.

Despite the heavy liquidation of stocks, transactions on the New York exchange in September fell 1,270,000 shares below August. The total of sales, however, for September was exceeded in only one other month of the year—in May—and was larger by 5,250,000 shares than the total of September last year. The surplus of idle freight cars reported during the week was only about 8 per cent of the total cars in the country. September brought definite halt to the exodus of the country's foreign labor population.

Shares were dealt in to the number of 2,575,900, compared with 5,577,800 last week, and 2,487,212 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $14,048,000, compared with $18,674,000 the preceding week, and $5,491,000 the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Oct. 3	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	10¾	− ⅛	Sept. 3	19,820 000			
Allis-Chalmers pr	33¾	+2⅛		16 150.000	7 cum	1¾ Q.	Feb., 1904
American Can	6⅛	+1	Feb. 3	41 233 300			
Am. Can pr	66	+8⅛		41,233,300	7 cum	1¾ Q.	Oct., 1908
Am. Car & Foundry	40	+ ¾	June 25	30,000,000		⅛ Q.	Oct., 1908
Am. Car & Fdy. pr	102⅞	+ ⅜		30 000.000	7 n. c.	1¾ Q.	Oct., 1908
American Loc	46¾	+ ⅝	Oct. 20	25,000.000	5	1¼ Q.	Aug., 1908
American Loc. pr	101½			25 000.000	7 cum	1¾ Q.	Oct., 1908
American Ship	48¾	+ ¾	Oct. 14	7 60 .000	4	1 Q.	June, 1908
American Ship pr	99	−1⅛		7,900,000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries. pr.	97¼	.....	Oct. 6	15 810 000			
Am. Steel Foundries(new	29⅞	.....		14,247,400	6 cum	2¼	Aug., 1904
Barney & Smith	40	.....	June 2	2.0 0.000	4	1 Q.	Sept., 1907
Barney & Smith pr	110	.....		2.500 000	8 cum	2 Q.	June, 1908
Bethlehem Steel	22½	+ ½	April 7	14,862.000			
Bethlehem Steel pr	46½	.....		14 9 8 000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	36¼	+ ⅝	March 17	45,000.000*	6	1½ S. A.	Aug., 1908
Cambria Iron	.....	.....		8,168.000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	24¾	− ¼	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	35⅝	+2	Oct. 19	34 235 500		3½	April, 1902
Crucible Steel	6⅛	− ⅛	Oct. 21	24.578 400			
Crucible Steel pr	43	−1⅜		24,436.500	7 cum	1 Q.	Dec., 1907
Empire Steel	6	+1	Feb. 26	1,254.770			
Empire Steel pr	47	−1		2 500,000	6 cum	3 S. A.	July, 1908
Fay & Egan	100	.....	Feb. 18	1,000,000	6	1½ Q.	Aug., 1908
Fay & Egan pr	110	.....		1,0 0 000	7 cum	1¾ Q.	Aug., 1908
General Electric	137	−3¼	May 12	65,167.400	8	2 Q.	Oct., 1908
Harbison-Walker	13	.....	Jan. 20	18,000 000		⅜	Oct., 1907
Harbison-Walker pr	74½	.....		9,6 0,000	6 cum	1½ Q.	July, 1908
International Pump	26½	+4¾	June 2	17.787.300		1	April, 1905
International Pump pr	81½	+1¾		13,835.000	6 cum	1½ Q.	Aug., 1908
Lackawanna Steel	34	−1	March 11	34,971 400			
Lake Sup. Corp	6	.....	Oct. 7	40,000.000			
New York Air Brake	74	− ½	June 18	8.012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8,000 000	6	1½ Q.	Sept., 1908
Niles-Bement-Pond pr	100	.....		2.000.000	6 cum	1½ Q.	Aug., 1908
Otis Elevator Co.	37	−1	March 16	6 156,600		1½ S. A.	April, 1908
Otis Elevator Co. pr	90	.....		5.449.500	6 n. c.	1½ Q.	Oct., 1908
Penn. Steel	50	.....	May 11	10.7 0 000			
Penn. Steel pr	102	−2½		16.5 0 400	7 n. c.	3½ S. A.	May, 1908
Pittsburg Coal Co.	11	.....	Feb. 10	28,853 400			Nov., 1906
Pittsburg Coal Co. pr	39	.....		27,030.800	7 c.	1¾	April, 1905
Pressed Steel Car	32¼	+1	Feb. 19	12,500,000		3	Aug., 1904
Pressed Steel Car pr	92	−2		12.500.000	7 n. c.	1¾ Q.	Aug., 1908
Pullman	160½	.....	Nov. 11	100 000 000	8	2 Q.	Aug., 1908
Railway Stl. Spring	38	.....	March 5	13,500.000	4	2 S. A.	April, 1908
Railway Stl Spring pr	100½	.....		13,500.000	7 cum	1¾ Q.	Sept., 1908
Rep. Iron & Steel	22½	+ ⅛	Oct. 21	27,191.000			
Rep Iron & Steel pr	79⅛	+1⅛		20,416 900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	61	.....	March 11	10,000.000	5	1 Q	Sept., 1908
Sloss-Sheffield pr	103	.....		5,700.0 0	7 n. c.	1¾ Q.	Sept., 1901
U. S. Pipe & Fdy	24½	+ ½	June 24	12,500.000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	71¾	− ¾		12 500,000	7 n. c	1¾ Q.	Sept., 1908
U. S. Steel	45¾	+ ⅜	April 20	508,302,500	2 n. c.	½ Q.	Sept., 1908
U. S. Steel pr	109⅝	+ ⅜		360,281.100	7 cum	1¾ Q.	Aug., 1908
U. S. Steel 5'	102	+ ⅝		463,798.000	5	5 A.	.....
Va. Iron,Coal &Coke	56⅛	−1⅜	Nov. 17	9.073 880			
Westinghouse Elec	74½	− ½	June 24	23 933 200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	102	−1	Oct. 6	14,000.000*		2½ Q.	Oct., 1908

Par value of shares, $100, except those starred (*), $50

Copper Stocks.

New York.—Amalgamated Copper closed 76.38, a net gain of 1⅞.

Boston.—Butte Coalition closed 25⅛, a net gain of ⅝. Calumet & Arizona closed 117¾, a net gain of 1¾; Calumet & Hecla closed 645, a net gain of 5; North Butte Mining closed 83½, a net gain of 1⅝; Quincy Mining closed 93, a net gain of 3.

Financial Notes.

The Nova Scotia Steel Co. declared the regular quarterly dividend of 2 per cent on preferred stock, payable Oct. 15; the Nicholson File Co., of Providence, R. I., a quarterly dividend of 2½ per cent, payable Sept. 30; the Thompson-Starrett Co., the regular semi-annual dividend on preferred, payable Nov. 15; J. L. White & Co., the regular quarterly dividend of 1½ per cent on preferred, payable Oct. 1.

The Warren Construction Co., Warren, O., has received the contract for 300 tons of steel structural material to be used in erecting a new cement plant at Sandusky. The company has also received contracts for fire escapes on schools at Mt. Vernon, Helena, St. Mary's, Senecaville, Kingsville and Shiloh, O.

NEWS FROM MANY INDUSTRIES

New Buyers:—

W. G. Bryant, J. B. Putnam and Ed Tyree, are the incorporators of the Bryant & Putnam Machinery & Mining Co., Webb City, Mo. The company has a capital of $2,000.

The Central Fence & Machine Co., Metropolis, Ill., with $5,000 capital stock, has filed articles of incorporation through William P. Baynes, Edward J. Benjamin and John T. Kimball.

The V-Block & Machinery Co., Cleveland, 429 the Arcade, has been incorporated by Harold L. Gates, Isaiah Whistler, Edward Ketteringham, William R. Chapman and William M. Jennings, with authorized capital of $2,000.

The Electrical Construction & Insulating Co., Cincinnati, capitalized at $25,000, has been incorporated by Ivan C. Bushong, Thomas Messerschmidt, A. W. Potts, F. A. Eishoff and Horace G. Harstman.

Will C. Scott, George E. Cady, Henry L. Avery and Bert S. Johnson, all of Akron, O., have chartered the Akron Heater Co., Akron, O., with $5,000 capital stock, to manufacture heaters, radiators and furnaces.

Schmachtenberg Bros., New York City, to manufacture cutlery and tools, with $60,000 capital stock; have been chartered by William Schmachtenberg, Adele Schmachtenberg and M. Henry Schmachtenberg, 52 Rutland road, Brooklyn, N. Y.

The Automatic Electric Signal Co., Portland, Me., has been chartered to make and sell electric signals and devices, with a capital of $1,000,000. F. I. Moore is president of the company, and J. F. Fagan, treasurer and cleerk, both of Portland.

A certificate of incorporation has been granted to the Great Northern Engineering & Supply Co., New York City, general contractor, with a capital of $10,000. The incorporators include: William S. Congalton, 246 Water street; Henry Woog and George M. Brooks, 43 Wall street, all of New York City.

Applications for Pennsylvania charters have been made at Harrisburg by the following companies: The Independent Bridge Co., Pittsburg, by E. C. Chalfant, T. P. Trimble and O. Smith, all of Pittsburg; The Crane Iron Co., Catasauqua, by Leonard Peckitt, J. W. Fuller, A. H. Brown, J. S. Stillman, A. A. Fowler, C. H. Zehnder and E. R. Chapman; The Aetna Forge & Bolt Co., Aetna, Allegheny county, by Conrad C. Metzger, John Metzger Jr., Frederick G. Metzger, George J. Metzger and Martin Metzger.

F. W. Hallam & Co., New York City, mechanical engineers and general contractors, have been granted a certificate of incorporation, with an authorized capital of $10,000. The incorporators are F. W. Hallam and H. E. McGee, 439 East Twenty-second street, and Samuel H. Hitchcock, 76 William street, all of New York City.

The McDermott Bros. Co., Allentown, Pa., with $35,000 capital stock, has been incorporated to handle machinery, tanks, boilers, structural and special iron and steel contracts. Those interested are: John H. McDermott, H. Dale Thomas and Lawrence H. Rupp, Allentown, and Robert T. Reichart, Rittersville, Pa.

The Automatic Brake Co., Haverhill, Mass., to manufacture brakes, has been incorporated with $30,000 capital stock. The officers mentioned in the charter are: President, Alexander Godfrey, 38 Locke street; treasurer, Frederick W. Millay, 23 Fountain street; clerk, William Laughlin, 40 Pecker street, all of Haverhill.

The Gray-Aldrich Co., Boston, Mass., has been granted a charter to manufacture and deal in gas, gasoline, maritime and stationary engines, with $25,000 capital stock. The officers of the corporation are: President, Edwin Gray, 44 Segamore street; treasurer, Chester S. Aldrich, 380 Park street; and J. Rich Larkin, clerk, 8 Linsay street, all of Dorchester.

Articles of incorporation have been granted the Pieced Stay Machinery Co., Haverhill, Mass., capitalized at $150,000. The company will deal in patents pertaining to machinery, and has these officers: President, Fred A. Anderson, 49 Haseltine street; treasurer, Moses W. Snyder, 77 Beach street; and clerk, Ransome C. Pingree, 8 Newcomb street, all of Haverhill.

New Construction:—

The Lebanon Valley Iron Co., Lebanon, Pa., has placed an order for the erection of a finishing mill 60 x 200 feet, on which work will be started at once.

The Frazier Stove Co., Indianapolis, Ind., has awarded the general contract to Clifton & Son, Peru, Ind., for a two-story foundry structure at Anderson, Ind., estimated to cost $25,000.

The American District Steam Co. has awarded the general contract to Lathrop, Shea & Henwood, Buffalo, for a manufacturing plant to be built at North Tonawanda, N. Y., to replace the plant recently destroyed by fire. The estimated cost will be $100,000.

The Byron Jackson Iron Works, Oakland, Cal., is planning improvements to its plant which are estimated to cost about $15,000. The additions will include the new store rooms, shops and machinery, and will make this plant one of the largest of its kind on the Pacific coast.

The Termaat & Monahan Co., Oshkosh, Wis., manufacturing gas engines, has purchased property adjoining the old plant and has begun excavating for a new building. The company proposes to continue its present line of manufacture, but will specialize on marine engines chiefly.

Stockholders of the Dundee Brass Mfg. Co., Dundee, N. Y., which is now being organized, have decided to erect the buildings needed themselves by raising 20 per cent more on the capital stock. A committee has been appointed to take up the location of a railroad switch to the proposed site.

In order to enlarge the galvanizing department of the plant, the Atlanta Tinplate Co., Atlanta, Ga., has purchased 10 acres of ground adjoining the plant. Foundations are also in for two new hot mills, which will make six in all. It is said the plant has sufficient orders ahead to keep busy for a year.

The W. K. Prudden Co., Lansing, Mich., has been making extensive improvements to its plant. A two-story machine shop is already completed, and two other buildings will be erected shortly, a bending plant 40 x 100 feet, and a storage house, 40 x 80 feet. It is hoped to complete the additions before winter weather sets in.

Arthur LaMay has purchased a 15-acre site at Rochester, N. Y., and has broken ground for the erection of a machine shop. Special machinery, including canning machinery, invented by Mr. LaMay will be turned out. The plans will be built "L" shape, 200 feet east and west on Emerson street, and 180 feet north and south on McNaughton street. The building

will be of brick. The power house will be 40 x 60 feet, and the foundry 30 x 50.

Sayre Bros., Phoebus, Va., whose plant was burned some months ago, are planning to rebuild with concrete structures. The main foundry building will be 45 x 190 feet with side floor 19 x 24 feet on one side. The machine and pattern shops will be housed in separate structures. In the shop equipment aside from small tools will be a six-ton hand-power traveling crane with 45-foot span.

Construction of a proposed plant by the James B. Clow Co., manufacturer of iron pipe and supplies, of Chicago, at Coshocton, O., for the purpose of combining the plants of the company at Chicago and Newcomerstown, O., will be commenced soon, it is said. Citizens of Coshocton raised a bonus of $100,000 cash and donated a site of 50 acres to secure the extensive plant.

The Heine Safety Boiler Co., St. Louis, has awarded to Fruen & Conlan, St. Louis, the general contract for erecting its proposed plant to replace the present one. On the site of six and one-half acres will be placed a main building 140 x 400 feet; flange shop, 60 x 180 feet; power house, 75 x 80 feet. The buildings will be of steel and brick construction with cinder concrete roofs. The machinery equipment will be driven by electric motors.

The Canadian government in a recent issue of the *Canadian Gazette* has called for tenders for the erection of the locomotive shops for the National Transcontinental railway on the site in Springfield, about six miles from Winnipeg, Manitoba. Tenders will close Oct. 8, and plans are being shown in the office of the district engineer, S. R. Poulin, Ottawa. The buildings for which tenders are now being called will be 130 x 800 feet, three stories, of brick and cement construction. The statement is made that the expenditure will eventually involve the sum of $1,500,000.

The Badger Malleable & Mfg. Co. has broken ground at South Milwaukee, Wis., for the erection of its proposed new plant. The main foundry building, of concrete, brick and steel, will be 444 feet long, of which 260 feet will be 80 feet wide, 104 feet will be 100 feet wide, and 80 feet will be 90 feet wide. The machine and pattern shop of brick and concrete with concrete floors will be 60 x 200 feet. Other buildings will include: Supply sheds, 120 x 24 feet, of solid reinforced concrete; pattern vault, 20 x 50 feet, of solid reinforced concrete; office, 34 x 36 feet, frame above, with concrete basement; warehouse, 200 x 60 feet.

The Ontario Iron Works, Pulaski, N. Y., manufacturing boilers, engines, agricultural implements and special machinery, is building a two-story addition to its machine shop, 50 x 80 feet, making the shop 50 x 150 feet. The upper story will be used for a pattern shop, stock room and show room, and the blacksmith shop will be located in the lower back end of the addition. Further equipment will be required, but it will not be purchased until some time toward spring. A. E. Olmstead is proprietor.

General Industrial:—

The Standard Pattern Mfg. Co., Richmond, Ind., has increased its capital stock from $5,000 to $10,000.

The Western Smokeless Locomotive Co., New York City, has increased its capital stock from $1,500,000 to $3,000,000.

The Union Malleable Iron Co., Moline, Ill., recently started its fifth furnace and added about 50 men to its force of employes.

The Great Western Stove Co., Leavenworth, Kas., advises that there is no probability of its erecting any new buildings this year.

The contract for a new pump for the pumping station at Fort Dodge, Ia., has been awarded to the Canton Hughes Co., Canton, O., at its figure of $7,975.

The McDowell-Stocker Co., Chi-Chicago, machinery manufacturer, has increased its capital stock $130,000, and is offering $50,000 of new 7 per cent preferred stock to the public.

E. D. Jones & Sons Co., Pittsfield, Mass., paper making machinery, advises that its recent fire was a small one, the damage being less than $3,000, and was principally confined to some small buildings adjoining the foundry. The company will rebuild at once.

The Jacques Steel Co., Kansas City, Mo., recently incorporated with $50,000 capital stock by William R. Jacques and others, advises that it will operate as a jobber and territorial agent for eastern steel manufacturers, with offices at 413 R. A. Long building.

The H. W. Graber Machinery Co., Dallas, Tex., advises that its recent increase in capital stock is intended to enlarge its field of operation in Texas and adjoining states as selling agents for the manufacturers of machinery, including pumps, boilers, engines, etc.

The Richard Heckscher Sons Co., which operates the Swede furnace in the Schuylkill valley, Pa., has increased its capital stock $800,000, the total now being $2,000,000.

The United Iron Works Co., Joplin, Mo., has made a contract with the Keller Steam Economizer Co. for manufacturing the Keller patent boiler feed devices, and for exclusive sales rights in six states.

Supt. L. S. Meek, of the Pennsylvania & Lake Erie Dock Co., Fairport Harbor, O., advises that the plans for replacing the machine shop recently burned have not as yet been definitely outlined.

The DuBois Machine Works, DuBois, Mont., William Huther and Louis C. Roth, proprietors, recently installed a lathe planer weighing 8,500 pounds. The plant is proving able to do a successful business.

The Kansas City, Mexico & Orient Railway Co., through Vice President E. Dickinson, advises that plans have not been completed for rebuilding the Wichita, Kas., shops, and from present indications, will not be in shape to give out for several months.

The Link-Belt Co., Indianapolis, advises that the newspaper report of its building a new plant is premature; that the land purchased for the proposed new site was bought something more than a year ago, and that nothing definite has been determined upon at this time as to improving it.

The Akron Iron & Wire Co., Akron, O., whose incorporation was recently noted, is the incorporation of a partnership that has been manufacturing for six months. The new officers of the company are: President, J. M. Davidson; secretary and treasurer, F. W. Koerschner, and manager, J. W. Mueller.

The Compagnie J. G. Brill, of Paris, France, has been organized to handle the business of the J. G. Brill Co., of Philadelphia, in France and Spain. Brill trucks and equipment have been used for a number of years in those countries, and a plant is now to be established in France, where the trucks will be built by French workmen and with French machinery.

W. O. Collins has purchased the interest of the family of August Pech in the Pech Foundry & Mfg. Co.'s plant, at LeMars, Ia. Mr. Collins has been associated for some time with the foundry. Since the death of her father, Miss Dora Pech had as-

sumed management of the plant and had succeeded admirably in conducting it.

The Lake Erie Boiler Works, Buffalo, has been awarded a contract by the United States government calling for 12 35-ton Scotch marine boilers, 11½ feet in diameter and 12 feet long. The plant is also constructing two Scotch boilers 15 feet 6½ inches by 11 feet 6 inches for the transportation service of the New York, New Haven & Hartford railway, and six dry back Scotch boilers for a mining company with offices in San Francisco.

The Sterling Mfg. Co., Sterling, Ill., advises that its recent increase of capital stock is to be used not to increase the plant, but since there was a surplus of about $140,000, the company decided to devote $100,000 as a stock dividend. It is merely a transfer of the profit of the surplus account accumulated in the last three or four years and issuing stock for the amount so transferred. It is plainly an evidence of the prosperous condition of the business of the Sterling Mfg. Co.

The Bluffton Foundry & Machine Co. advises that its recent incorporation was for the purpose of taking over the entire property of the Andrew Klay Machine Works, of Bluffton. The building will be remodeled, and whatever new machinery is needed will be added. A first class machine shop will be installed, as well as a boiler shop, and in the near future it is the intention of the company to add a complete foundry. It will add whatever new equipment will be found necessary to make a complete foundry and machine plant.

The Quinn Wire & Iron Co., Scranton, Ia., whose plant was badly damaged by fire as recently noted, has signed a contract with the Boone Investment Co., Boone, Ia., to rebuild its plant in the latter town. The company purchased land upon which an $8,000 building will be erected, the whole to be donated to the Quinn Company. The foundry is to be in operation by Jan. 1, and the rest of the plant within 60 days thereafter.

Boyt, Porter & Co., Connellsville, Pa., has just shipped to the Washington Coal & Coke Co., at Star Junction, a 30 x 15 x 31-inch double-plunger mining pump, with a daily capacity of 1,500,000 gallons. It is of the latest improved wood-lined type for protection against sulphur mine water. The Connellsville company also shipped recently a second pump to the Merchant Coal Co., Boswell, Somerset county. It is a double-acting plunger mine pump, cement lined, with a 15-inch water cylinder, and 18-inch stroke, and has a daily capacity of 1,500,000 gallons. It requires a 250-horsepower motor to drive it. The company is now working on several other large pumps especially for mine use.

The Bettendorf Axle Co., Davenport, Ia., has now over 500,000 bolsters in service and the Bettendorf ideal car truck with the one piece frame is rapidly becoming adopted by the railway systems of the country. At the present time an order for 2,500 steel underframes for the Chicago, Milwaukee & St. Paul railway is being turned out at the rate of about 25 a day.

Fires:—

The foundry of Delano Forrest, Smithfield, Pa., sustained damage Sept. 29 to the amount of $3,500.

The loss on the frame foundry of the Trenton Brass & Machine Co., Trenton, N. J., Sept. 25, is placed at $4,000.

The machine shop of the E. L. Jones Steel Ball Co., Buffalo, was seriously damaged Oct. 2, the loss being placed at $50,000. This machine shop was practically all that remained of the plant after the fire of nine weeks ago.

The building of the H. J. Frank Foundry Co., Davenport, Ia., was damaged Sept. 25, the fire being confined largely to the molding room and the roof. The pattern room was flooded, but no patterns were destroyed. The loss is placed at $2,000; covered by insurance. The company has announced its intention of rebuilding at once.

TRADE PUBLICATIONS.

GAS ENGINES.—A 35-page catalog, 9 x 6 inches, has been issued by the Gas Power Producing Co., Lima, O., describing the Lima gas engines for stationary and electric lighting service, and also an engine of the portable type. These engines are of the four-cycle type and are made in capacities ranging from 6 to 80 horsepower. A semi-automatic engine is also made, which is mounted on skids, together with a producer for various work, such as pumping, wood sawing, elevator operation, printing, etc. The portable engine is mounted on trucks, so that it can be taken from one point to another with facility. It is built in capacities ranging from 6 to 20 horsepower.

SUCTION CONVEYORS.—The Darley Engineering Co., Farmers Bank building, Pittsburg, is issuing bulletin No. 1, describing its patented suction conveyor system for the removal of ashes from boiler plants. It comprises a conveyor pipe, separator, exhauster and water jet, and removes the ashes from the ash pits by suction and discharges them to a storage bin whence they may be dumped into cars, as desired. It is made in three sizes, from 6 to 10 inches, with a capacity of 200 to 500 pounds per minute, respectively.

LATHES.—Catalog 7 has been issued by the Rahn-Carpenter Co., Cincinnati, describing engine, turret and gap lathes of from 16 to 32 inches swing. A great number of patterns are shown within this range of sizes designed for all services, from tool room work up to heavy shop purposes. The lathes are both motor and belt driven, are provided with taper attachments and all modern conveniences. The catalog comprises 40 9 x 14-inch pages.

BORING MILLS.—The Gisholt Machine Co., Madison, Wis., is distributing a bulletin sheet describing the Gisholt vertical boring and turning mill in 52, 60, 64 and 72-inch sizes.

METALLIC PACKING.—The C. Lee Cook Mfg. Co., Louisville, Ky., is distributing a bulletin describing its metallic packing for steam engines. The booklet comprises 35 6½ x 3½-inch pages, and, in addition to a description of the packing, contains a long list of users.

DIRECT-CONNECTED GENERATING SETS.—The General Electric Co., Schenectady, is distributing bulletin 4617, describing direct-connected generating sets comprising an engine mounted on the same bed plate with and connected to a generator. These sets are made in capacities from 2½ to 50 kilowatts, with single-cylinder engines, and from 25 to 75 kilowatts with tandem compound engines.

FEED WATER HEATING.—The Harrison Safety Boiler Works, Philadelphia, is distributing a pamphlet entitled, "Steam, Its Profitable Utilization," by Geo. H. Gibson. The paper discusses the steam requirements of prime movers of various types and shows the saving due to heating the feed water used to make steam for these engines.

ROLLING LIFT BRIDGES.—A handsome catalog comprising about 200 10½ x 7-inch pages, together with a number of folding insert pages, has been issued by the Scherzer Rolling Lift Bridge Co., Chicago. The catalog is bound in cloth and illustrated with designs of various bridges, which have been erected by this company. It also traces the development of the rolling lift bridge, showing how its forerunner was the old bascule bridge used as a draw-bridge in medieval castles. The advantages of the rolling lift bridge are discussed and photographs of the principal bridges erected by this company are given, together with line drawings of a number of the bridges in operation, or under construction, these being the movable spans in bridges crossing wide navigable waterways.

FOUNDRY EQUIPMENT.—Whiting Foundry Equipment Co., Harvey, Ill., has issued catalogs Nos. 43 and 55. These are of paper, with cloth binder, with 243 pages 6 x 9 inches. In this combined catalog are many illustrations showing electric and hand power cranes, pneumatic hoists, cupolas, crane ladles and other foundry equipment. The Whiting cupola is described in detail with sectional views and a diagram showing general dimensions.

POWER PUMPS.—The Dean Bros. Steam Pump Works, Indianapolis, is distributing catalog 71 illustrating the Dean Bros. power pump. These are made in a number of types and sizes, as follows: Duplex electrically-driven hydraulic pumps; duplex outside end-packed plunger pump; duplex outside center-packed plunger pump, electrically driven; duplex piston pump, electrically driven; duplex vertical belt-driven pump; air pumps and jet condensers, belt-driven; air compressors, both single and double-acting, etc. All these are made in a large range of sizes and capacities, which are fully listed in the catalog.